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# USSR Report

## MILITARY AFFAIRS



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MAJ GEN GORELOV REVIEW OF 'COMMANDER AND SUBORDINATES'

Moscow KRASNAYA ZVEZDA in Russian 20 Dec 86 p 2

[Review by Major General R. Gorelov, First Deputy Chief of the Order of Lenin Moscow Military District's Political Directorate of book "Komandir i Podchinennye" [The Commander and Subordinates] by V. Varvarov and L. Merzlyak, Voyenizdat, 1986, 168 pages]

[Text] I think that V. Varvarov and L. Merzlyak's book "Komandir i Podchinennye" that was published by Voyenizdat will attract the attention of many military readers. It is already of interest because it touches upon the issues that most often upset commanders and political workers and the leaders of party and Komsomol organizations. As was said from the rostrum of the 27th CPSU Congress, "Movement forward is fastest where discipline and organization, and every individual's responsibility for the matter entrusted to him and for excellent results are highest." These words contain the key to many problems that our officer cadres have. The book being reviewed attempts to help them solve these problems. It is directed toward the very numerous detachment of Soviet officers -- the commanders at platoon and company level who are directly involved in training and educating their subordinates.

Junior officers do not always succeed in establishing the correct interrelationship with their subordinates during the initial days of their command. Some keep themselves rigidly official and behind this there is often arrogance and conceit. Others do just the opposite and become familiar and liberal. And both are incorrect and cannot lead to good relations. The authors of the book show what kind of foundation a commander must base his actions on in controlling subordinates so that he can avoid errors and understand the science of command. The authors also stress the importance of individual work with people.

Studying personnel is one of the conditions for success in individual educational work and in its important mission. The authors use specific examples to show the most effective methods for teaching the peculiarities, needs, interests and moods of servicemen during the daily life of a soldier. In addition to this, there is the study of individual cognitive conversation, psychological-pedagogical observation and the study of documents and the results of operations. Even when systematically generalizing and analyzing

the results of that work and discussing it with officers, sergeants and the Komsomol activists in the company, it is still necessary to make an "estimate" as to which of the soldiers needs the most attentive relationship.

Just one of the book's conclusions is that the art of personal contact is the most important tool a commander can have. The more culture a commander has in his contacts with people, the more clearly he will show himself to be an organizer and educator of his subordinates. Sincerity, openness and trust are the key to the spirit and heart of a soldier and sergeant.

The book stresses that it is important to use every free minute for personal contact. Personal contact does not only mean knowing the personality of the soldier. An officer mobilizes his subordinates to resolve the assigned tasks, monitors and checks the accomplishment of those tasks and also solidifies the military collective through contact with them.

One of V. I. Lenin's behests states that success in leadership is not defined by "the the strength of power, but by the strength of authority." An officer must set the example in everything so that subordinates can be proud of their commander. A special chapter in the book entitled "There Is A Profession Called Defender of the Motherland" is devoted to this work. The authority of a service position is only strong when it is filled with personal authority. Subordinates will always value spiritual sensitivity, tact, modesty and honesty; exactingness will not cause irritation if it is dictated by the service situation and not by the personal whim of the officer.

The authors note that individual educational work must be set up in such a manner that every soldier is regarded as a member of a specific military collective. Therefore commanders and political workers must thoroughly know and understand the psychology of the military collective and must be able to develop a certain attitude in the collective and its internal groups.

The authors recommend that educational work both with individual servicemen and with military collectives be based on a strict system of measures that consider the influence that the collective has on the personality and also the specific personality of the collective.

The collective has a great influential role on servicemen. The most effective educational method is a wise individual approach by the commander and political worker coupled with the collective's influence. The section of the book entitled "The Commander and the Collective" is of interest in this respect. That section stresses that the commander must constantly feel the pulse of the military collective' daily life and work so that people are not passive and indifferent and so that every soldier is proud and careful of its honor and glory. The collective on the whole must be totally interested in the success of every soldier. The creation of this type moral atmosphere in a military collective is a matter of honor for officers and sergeants as well as for the party and Komsomol activists in the subunits. It is impossible to consider excellent results in individual educational work unless the commander-in-chief constantly relies on party and Komsomol organizations.

As noted in the book, a high pedagogical level of commander-educators and their ability to put into practice creatively the theses of Marxist-Leninist theory, pedagogics, psychology and personal examples in training and service are all necessary for there to be success in developing the personality of the armed defenders of the Motherland.

The authors fairly point out that the struggle for further improving the effectiveness of ideological-political and military education is dictated by the necessity of restructuring work with people and the new ideas and psychology of commander-educators.

While giving the book a positive evaluation as a whole, I should say that the authors were not totally successful in exposing all the forms and methods of the work of solidifying the collective. Unfortunately the problems of working with multi-nationality military collectives were left out. And nothing was said about being able to rely on servicemen with the higher education in this type of work. Also several aspects of platoon commander activities in training subordinates under conditions that approach real combat were not covered well enough.

12511
CSO: 1801/100

## IVANOVSKIY REVIEWS NEW EDITION OF ENCYCLOPEDIC DICTIONARY

Moscow KRASNAYA ZVEZDA in Russian 27 Dec 86 p 2

[Review by General of the Army Ye. Ivanovskiy of second edition of Voyennyy Entsiklopedicheskiy Slovar [Military Encyclopedic Dictionary] by an editorial commission headed by Marshal of the Soviet Union S. F. Akhromeyev, Voyenizdat, 1986, 803 pages with illustrations]

[Text] The one-volume Military Encyclopedic Dictionary has been published. It contains approximately 14,000 articles and 1,700 different illustrations. The authorship collective and the editorial staff have succeeded to a great degree in reflecting the historic decisions of the 27th CPSU Congress that defined the general line for accelerating the country's social and economic development and pointed out the need for new political thought that conforms to the reality of the nuclear age. They also succeeded in increasing the scientific level and importance of the dictionary articles and thoroughly showing the CPSU's multi-faceted activities in military issues, averting a world nuclear war and creating a comprehensive system of international security.

Articles about military-political subjects hold a special place in this dictionary. These articles describe the basics of Marxist-Leninist teachings on war and the army, and war and peace, as well as the basics of Leninist teachings on defending the Socialist Fatherland and the CPSU's military policies. The article "CPSU Military Policies" stresses that the CPSU military policies are extremely scientific and thoroughly consider the objective laws of social development and war and the totality of internal and external factors that have an impact on resolving military issues. The party realizes the Leninist principle of the unity of economic and defensive tasks. Accelerating the social and economic development of the country and restructuring all the spheres of activity, strengthening discipline and order all have a direct effect on resolving defensive tasks. As long a the imperialist NATO Bloc exists, the party feels it necessary to do everything possible to improve the activities of the Warsaw Treaty Organization as an instrument for collectively defending against the aggressive aspirations of imperialism. The problems of developing and strengthening the Soviet Armed Forces have an important place in the party's military policy. The CPSU leadership is the basic foundation of Soviet military construction.

The book under review places a lot of importance on revealing the theory and practice of party construction and the legality and principles of party-political work in the Armed Forces. The content and methods for organizing party-political work in the forces and moral-political and psychological training for personnel are exposed. A number of articles comprehensively present the multi-faceted activities of commanders, political workers and party and Komsomol organizations that are aimed at successfully accomplishing the tasks of military training and supporting strong military discipline, a high level of vigilance, fighting ability and combat readiness. In comparison to the first edition, the subjects of the articles dedicated to ideological work in the army and navy have been expanded.

The dictionary presents an well-reasoned critique of imperialism's and especially American imperialism's aggressive, adventuristic policies. Based on new materials, the dictionary shows U.S. roles and participation in the intervention in Lebanon, the Israeli aggression against the Arab countries, the undeclared war against Grenada and Lebanon, training and supporting the counter-revolutionary forces in Nicaragua and El Salvador, and providing all kinds of support for the reactionary racist regime in the South Africa.

The dictionary gives an extensive presentation on military-theoretical topics, the most important of which are the articles on military doctrine, military science, military art and also materials on the various forms of combat operations at a strategic, operational and tactical level.

The article on military doctrine stresses that it has two sides -- socio-political and military-technical. The socio-political aspect covers issues relating to political goals and their relationship to war and a state's military-political missions in war, and is definitive. The military-technical aspect includes issues of direct military construction, the technical equipping of the Armed Forces and their training, a definition of the forms and methods for conducting operations and war on the whole. The CPSU has the most important role in developing Soviet military doctrine. The article clearly distinguishes the thesis of the strictly defensive nature of Soviet military doctrine and the fact that it is aimed at defending the Socialist Fatherland and averting a new world war. At the same time the article notes that our military doctrine has combined the peace-loving nature of the Soviet State's foreign policy with its constant preparedness to repulse decisively any aggressor.

The article "Military Science" contains a number of new theses that show its further creative development. Military science is defined as the system of knowledge about laws and the military-strategic nature of war, about constructing and preparing the Armed Forces and the country for war and about the methods for conducting an armed struggle. Soviet military science with its subject classifications that conform to the known laws include: the general basics (general theory) of military science; the theory of military art; the theory of constructing armed forces; the theory of military training and education; and the theory of military economics and rear area support for the armed forces. Military science also includes the problems of military history that are covered by that subject. Military science also includes the theory of commanding and controlling the Armed Forces, weapons and services.

The primary article on military strategy clearly defines the concept of strategy as a component part of military art. It shows that the theory of military strategy studies the regularities and nature of war and the methods for conducting it. The article develops the theoretical foundations for planning, preparing for and conducting strategic operations and war as a whole. The article also stresses that Soviet military strategy serves the peace and security of people. Its most important tasks under contemporary conditions are working on the problems of averting war.

A significant part of the dictionary is allotted to materials that are associated with the theory and practice of operational art and also tactics, an integral part of military art.

In considering the military danger from the reactionary circles of the imperialist states, the CPSU is manifesting constant concern for increasing the military preparedness of the Soviet Armed Forces.

Many articles in the dictionary are dedicated to the problems of constructing the Armed Forces. These articles do a good enough job of covering the roles of the various services in the Armed Forces, the arms of service and the special troops, their contemporary equipment and combat capabilities. For example, the article about Ground Forces notes that they are the largest service in the Armed Forces and most the diverse in terms of weapons and methods of combat operations. They have great fire power and shock force, are very maneuverable and independent. Contemporary Ground Forces in the Soviet Armed Forces are developed on a foundation of the latest military equipment and the latest achievements of military science.

Articles on military-historical topics present a short description of the history of war and of military art from antiquity to the present. Special attention is focused on Soviet military history. The rather detailed articles on battles, operations and actions of the Great Patriotic War are of great interest. The dictionary also includes information on local wars which imperialism has caused to become widespread since the Second World War.

A significant part of the dictionary is taken up by military-technical topics. Primary attention has been focused on modern military equipment, a description of models, purposes, operating principles and design decisions. The dictionary also has new articles about highly accurate beam weapons, reconnaissance and attack complexes, electromagnetic guns and other types of weapons that have been or are being developed in imperialist countries using new principles of physics.

The materials on military-geographical topics are devoted to a military-geographical description of states, continents, oceans, seas and other military-geographical objects that influence combat operations. These articles contain the latest information on the composition of the contemporary aggressive military bases of imperialist states.

The articles of a biographical nature which acquaint readers with the political, governmental and military figures, designers and inventors who made

major contributions to the armed defense of our Motherland, contributions toward victory in the Civil War and the Great Patriotic Wars, to strengthening the USSR's defensive might, constructing the Armed Forces and creating military technology, are of great interest. The dictionary also includes short articles about the outstanding military figures of Russia and other states.

The publication of the second edition of the Military Encyclopedic Dictionary will help military cadres expand their general and military horizons, will play a positive role in establishing a single interpretation for military terms and concepts and will serve as an excellent handbook to be used for independent study and for preparing and conducting exercises with personnel on operational, military and political training.

12511
CSO: 1801/100

## OBITUARY: LT GEN A. A. MIKOYAN

Moscow KRASNAYA ZVEZDA in Russian 24 Dec 86 p 4

[Obituary on A. A. Mikoyan by A. N. Yefimov, L. L. Batekhin, B. F. Korolkov, V. Ye. Pankin, A. N. Volkov, A. F. Borsuk, N. G. Shishkov, A. N. Zakrevskiy, V. M. Shishkin, V. V. Yefanov, I. F. Modyayev, P. I. Belonozhko, I. D. Gaydayenko]

[Text] A participant in the Great Patriotic War and honored USSR pilot, retired Lieutenant General of Aviation Aleksey Anastasovich Mikoyan passed away suddenly.

He devoted his entire conscious life to selflessly serving the Soviet Fatherland and the affairs of the Communist Party which he was a member of since 1945.

A. A. Mikoyan was born 20 December 1925 in the city of Rostov-on-Don. In 1943 he voluntarily entered the ranks of the Armed Forces and went from cadet to Lieutenant General of Aviation. During the Great Patriotic War he took part in the defense of Moscow's skies and made 35 combat flights. In the post-war years he commanded an aviation regiment and major units and also was a military district aviation commander.

For the last ten years he served in the General Staff of the Air Force carrying out difficult and important tasks associated with supporting flight safety and increasing the military preparedness of aviation.

A. A. Mikoyan carried out his party and military duties in all the posts that the party entrusted to him with a feeling of high responsibility. He was invariably noted for his principles, exactingness on himself and his subordinates and his sensitivity and attention to people.

A. A. Mikoyan's services to the Motherland were highly valued by the Communist Party and the Soviet State. He was awarded two Orders of the Red Banner, Orders of the Labor Red Banner and the Patriotic War 1st Class, three Orders of the Red Star, the Order "For Service to the Motherland while in the USSR Armed Forces" 3rd Class and many medals.

The glorious memory of Aleksey Anastasovich Mikoyan, an ardent patriot and brave soldier-communist, will be forever preserved in our hearts.

12511
CSO: 1801/101

## DATA ON FRAGMENTATION GRENADE

Moscow VOYENNYYE ZNANIYA in Russian No 10, Oct 86 p 30, back cover

[Article by Col (Res) V. Knyazkov: "Fragmentation Hand Grenades"]

[Text] The purpose of fragmentation hand grenades is generally obvious--to engage enemy personnel at short range in close combat. The grenades are subdivided into two groups, offensive and defensive. The first group, for example, includes the RGN antipersonnel fragmentation hand grenade (the abbreviation is deciphered as offensive hand grenade).

The weight of the filled RGN is 310 g and the weight of the explosive mixture is 114 g. The average range of its toss by specialists is 25-45 m.

The RGN's design is rather simple. The grenade's basic parts are a body with a sleeve for the igniter set, an explosive mixture, and a percussion-time igniter set. Look at the body, which is made of aluminum alloy and consists of a lower and upper hemisphere, each of which has internal serrature facilitating the formation of fragments when detonated.

The defensive grenades include the RGO (defensive hand grenade) fragmentation hand grenade. Its basic parts are the very same as for the RGN, but the body design has a substantial difference. It consists of four steel hemispheres: two lower and two upper inner and outer hemispheres. All of them also have serrature.

The RGO weighs 530 g, including 92 g of explosive mixture. The grenade is used primarily in defensive combat inasmuch as the average range of its toss is 20-40 m, while fragments spread in a radius of 100 m or more. This means it can be thrown only from an emplacement or some other cover, and if necessary from an infantry fighting vehicle, tank, APC and so on.

The RGN and RGO must be primed before combat. For this the plug is unscrewed from the body sleeve and the igniter set is inserted in its place and screwed in as far as possible; then the grenade is ready to be tossed. The soldier squeezes it in his hands with the lever pressed firmly to the grenade body, pulls the ring, cocks his arm and the "pocket artillery" projectile flies to the target. The explosive mixture detonates, the grenade body disintegrates and as a result a considerable number of fragments form.

The RGN and RGO are fitted with a common percussion-time igniter set which is extremely simple to handle and reliable in operation. It has to be mentioned

that reliability of the igniter set should be understood to have a dual meaning: on the one hand it guarantees detonation of a tossed grenade in any case, and on the other hand it ensures safety in handling. There are special safety devices for this.

By the way, how did the term "igniter set" arise? It comes to us from deep antiquity when it was necessary to light the grenade's wick before tossing it or, in other words, to ignite it. That is how this word found a home in the military lexicon. And in our days the entire structural assembly intended for detonating the explosive mixture in the grenade is called an igniter set.

Five functional parts can be identified in this set: a firing-safety mechanism, target sensor, timing device, distant arming mechanism and detonation assembly. All of them are configured in a polyethylene casing.

The purpose of each part in brief: the firing-safety mechanism serves for initiation of the pyrotechnic delay compositions of the timing device and distant arming mechanism and guarantees safety of the igniter set in handling. And the target sensor? It triggers the igniter set when the grenade strikes an obstacle in any position. The explosive mixture detonates 3.3-4.3 seconds after the grenade is tossed because of the timing device. The distant arming mechanism also ensures safety of the igniter set in handling and prepares it for action 1-1.8 seconds after the RGN or RGO is tossed at the target. And finally the detonation assembly: this is what detonates the explosive mixture.

We will note that almost all parts of the igniter set perform specific safety functions to one extent or another. To see this, let us follow the sequence of their triggering.

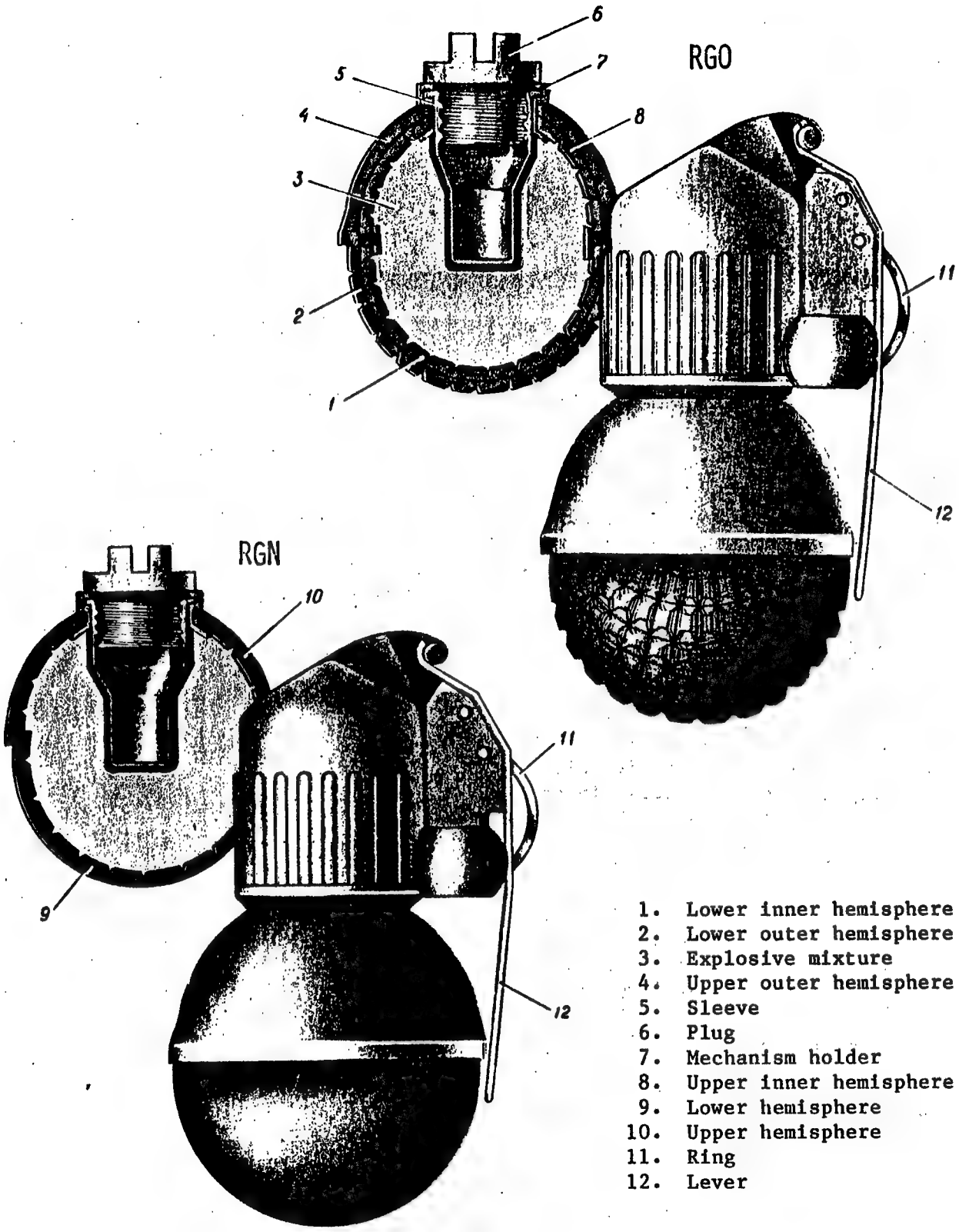
Squeezing the grenade in his hand and pressing the lever to the grenade body, a soldier grabs the ring with his fingers and pulls the pin--the first stage of safety has been removed. In the toss the fingers unclasp and free the lever, which flies away from the grenade body--the second and third stages of safety are removed.

When the lever recoils from the body, the striker describes an arc under the effect of the free end of a spring and its needle hits the igniter set cap of the firing-safety mechanism. A shaft of flame forms, igniting all pyrotechnic compositions. As the compositions burn out in the distant arming mechanism, pushers, drawn in by springs, move forward and occupy an end position in 1-1.8 seconds. This will remove the fourth stage of safety--the igniter set is finally prepared for action.

Then inasmuch as the pushers will disengage from the slide body, the latter will move forward under the effect of a spring, free the needle and place the igniter set cap precisely under the needle point--the fifth stage of safety has been removed and the igniter set is armed.

The sixth stage, as they say, is the final line. Its function is performed by the released spring of the target sensor. As soon as the grenade strikes an obstacle, inertial forces begin working. Regardless of the position of the grenade body at the moment of impact, the target sensor will react to the

## Fragmentation Hand Grenades




1. Lower inner hemisphere
2. Lower outer hemisphere
3. Explosive mixture
4. Upper outer hemisphere
5. Sleeve
6. Plug
7. Mechanism holder
8. Upper inner hemisphere
9. Lower hemisphere
10. Upper hemisphere
11. Ring
12. Lever

impact without fail. The massive spherical load will "catch" the force component along the needle axis, compress the spring and cause the tubes to displace, as a result of which the needle will prick the igniter set cap and the shaft of flame from the cap will jump to the igniter.

Now let's simulate the most unlikely instance where a grenade has hit the target but has not detonated after impact. This of course is extremely undesirable. This is why the designers created the igniter set, which has not been given the name percussion-time by chance.

We will recall that in the initial moment when the grenade was tossed the firing-safety mechanism triggered and all pyrotechnic compositions began burning, including a delay composition related to the timing device. It is the longest; its burning time is 3.3-4.3 seconds. As soon as this composition burns to the end a so-called bursting charge is triggered and the igniter will function from its impact. Detonation of the igniter is reinforced by a detonator charge placed on the bottom of the depression in the lower hemisphere and is transmitted to the grenade's explosive mixture. The grenade body breaks up into fragments of a given mass in a spherical pattern.

The igniter set guarantees detonation of a grenade tossed at a target under varying terrain conditions, at any time of year with atmospheric air temperature from +50° C to -50° C.



6904
CSO: 1801/90

# FLIGHT SAFETY: JUNIOR OFFICER PRE-FLIGHT TRAINING

Moscow KRASNAYA ZVEZDA in Russian 24 Dec 86 p 2

[Article by Lieutenant Colonel A. Shashkov, Military Pilot First Class under the "For Flight Safety" rubric: "The Prerequisites May Not Be There"]

[Text] Squadron commander Lieutenant Colonel V. Zhaboyedov, finished monitoring his subordinates' flight training. This final step of preliminary aviator training for the upcoming military training exercise in the air was being inspected by the fighter aviation regimental deputy commander, Lieutenant Colonel A. Guryev. In private with the squadron commander, he made an objective analysis. The discussion basically covered the effective use of the personnel's training time and the organization of the flight training for subordinates.

The inspector noted the methodologically skillful way that Lieutenant Colonel Zhaboyedov had set up the exercises with the pilots. The squadron commander conducted the exercises in an expedient manner and considered the peculiarities of the upcoming missions. Training on the combat simulators and special equipment was filled with unexpected hypothetical introductions and a lot of attention was focused on safety measures. And the issue of pilot interactions with ground specialists was not avoided. In making his conclusion, Lieutenant Colonel Guryev noted that people in the subunit value every minute of training time and use them as they were intended. On the whole the subunit had a strict system for preparing crews and aviation equipment for flights. The squadron commander did not substitute for his deputies, yet still got personally involved in the problems of setting up military training.

But many things in this squadron were quite different just a little while ago. Take the development of young pilots for example. There was no stability in their training. They were not known for their clear piloting techniques and allowed errors and gross conditions that could lead to flight accidents.

Once during training flights Lieutenant A. Tikhonov was taxiing on the runway. And the pilot's actions in the cockpit seemed clear and sequential. He pushed the transmit button and asked for permission to take off. The lieutenant was not given an "OK." Tikhonov heard the command, "check the setting on the flap panel!"

Flight controller Lieutenant Colonel A. Lazarev did this to help the young pilot correct an error. But a flight safety violation had been made and the pilot's name was entered into a special book. All that remained was to fill in the blank under "Reason."

Captain I. Leventsov was involved in Lieutenant Tikhonov's training. The former was an experienced flight commander and a good methodologist. But he had not paid attention to the fact that his subordinate had taken his pre-flight training in an off-hand manner. Captain Leventsov had to monitor other pilots and prepare himself. And a flight commander never has enough time before a flight shift.

The shortage of time was also felt the day before, during preliminary aviator training. The flight commander and his subordinates had scarcely been able to complete the reporting documents. During the hours that were allotted to the officers for preparations they had mechanically copied various instructions and directions into their work books. After glancing in passing at the pilots, the squadron commander ran a quick check, asked them several general questions and went out to rest. Thus one could say that the error that Lieutenant Tikhonov allowed the next day was caused by the previous very rapid speed of the flight preparation.

There was yet another officer, Lieutenant K. Komisarenko, who was at the same stage of mastering the equipment that was new to all the squadron's young pilots. Once when getting ready to land he did not get his wings in landing configuration. He only noticed this when he moved the landing gear knob to the down position and the accident light began to blink. And again there is no way that you can explain this as an accident. It turned out that the schedule for training time had been disrupted the day before the flight and training in developing the sequence of actions with the airplane's cockpit instruments began one-half hour late. Flight commander Major A. Sidov covered this training very quickly and was not very thorough.

Flight training to a degree had become a formality with the pilots. The fault was primarily due to the squadron commander who at that time often shifted his own responsibilities in monitoring the flight training of his subordinates to his deputy, the flight commander, after the former had assigned missions.

There were cases where instead of getting involved in his primary mission, training the subunit for flights, the squadron commander spent a lot of time developing or altering planning charts. Thus he kept aloof from personally controlling the flight training for pilots and lost his methodological skills in training subordinates. And flight analyses in the squadron were superficial.

Naturally, all of this could not but be reflected in the aviators' training. One night in a military training fighter a young pilot did not turn on the system that turned his front wheel before taking off. During the take-off run the airplane moved sharply to the left and the instructor had to take over the controls. He corrected the dangerous error and made the take-off. The flight commander qualified this near-accident as pilot carelessness. A detailed

analysis showed that the real reason was that the officer was not trained well enough. He had poor skills in working with cockpit instruments under night conditions. The flight commander did not consider the fact that there was something different for his subordinate during that specific flight shift -- it was a moonless night. Before this the officer had flown at twilight and on moon-lit nights. While planning the missions for the pilot, the squadron commander had tried not to violate the sequence of exercises, but he had not thought it all through to such detail. And to be more correct, he had not known the training peculiarities of his subordinate.

The frequent errors by the pilots in the squadron attracted the attention of the unit commander. Regimental deputy commander Lieutenant Colonel A. Guryev carefully studied the nature of the near-accidents and come to the conclusion that the primary reason they had happened was that the methodology for training aviators was being violated. And it was not only the squadron commander who was at fault in this. Officers from the regimental headquarters seldom visited the subunit, supposing that the squadron commander was monitoring the pilots training. He in turn was relying on his deputies.

Methodological council meetings, party meetings and technical flight conferences held severe, impartial discussions on the situation that had developed in the regiment. The best officer-methodologists from regimental headquarters were sent to help Lieutenant Colonel Zhaboyedov and the other squadron commanders. Without limiting the commanders' independence, these headquarters officers passed on their experience in setting up the training process to the commanders. And results were soon forthcoming. The number of gross mistakes made by pilots dropped. The young pilots begin to work more confidently in the air. Squadron commanders skillfully developed their military attitudes on the ground. And after visiting preliminary flight training in the squadron that Lieutenant Colonel Zhaboyedov commands, Lieutenant Colonel Guryev is sure of this today.

12511
CSO: 1801/100

## CHERNAVIN ON REQUIREMENTS FOR COMBAT READINESS

Moscow MORSKOY SBORNIK in Russian No 1, Jan 87 (signed to press 5 Jan 87) pp 3-11

[Article By Hero of the Soviet Union Fleet Admiral V. Chernavin, Commander-in-Chief of the USSR Navy: "Teach Them What They Need For War"]

[Text] The entire history of the Soviet state's foreign political activities shows its consistent and untiring fight for peace, for the peaceful coexistence of states with different social systems, for the creation of an all-embracing international security system and the protection of all countries from possible aggression and also for the prevention of a nuclear war in the 20th century. The USSR has never threatened a single state with force and has never forced one to follow its policies by using economic pressure.

Soviet military doctrine is strictly defensive in nature. However in the almost seventy years that the Soviet Government has been in existence and despite its peace-loving policies, our people have again and again been forced to defend the conquests of the Great October with weapons in hand--first on the fronts of the Civil War against counter-revolutionary and interventionist forces and then in the difficult fight against the German Fascists and their allies.

In all the military tests, the Soviet style life and the socialist national relationships and economy have convincingly proven their survivability to the entire world and have clearly demonstrated the advantages of the socialist system. And it was the Soviet soldier who saved the world from the fascist plague and saved the peoples of Europe from enslavement.

After the Second World War international imperialism, realizing that it could not be victorious in peaceful competition with socialism, again turned to confrontation, is generating and supporting the most reactionary regimes in all the corners of the earth and is trying to achieve military superiority so that it can dictate its will everywhere. American imperialism, the most reactionary and aggressive brand of imperialism with its powerful economy, modern material and technical base, highly developed sciences and its large contingent of armed forces, is the shock force in this action. It arbitrarily

declares various regions of the work a zone of its vital interests and is conducting plundering "neoglobalist" actions against Lebanon, Nicaragua, South Africa and other areas on the planet.

The primary means of the U.S.'s expansionist policy is its naval forces. Therefore the Navy has been given special attention in the post-war period. More and more appropriations are being allocated to their development, equipping, armaments and maintenance every year. And not only are new ships being built, ships from the Second World War era are being modernized. New shock formations are being created and naval maneuvers by the U.S., NATO and other capitalist countries are being conducted every year in various regions of the world's oceans. And these maneuvers are becoming progressively larger and are coordinated as far as time and goals are concerned. Their ships frequently come close to the borders of USSR territorial waters and are clearly provocational. At times they actually cross those boundaries, as happened in the Black Sea, and a U.S. Navy airplane violated our air space in the Far East.

"We must look at things as they are... A very serious conclusion emerges from this military and political policy: people (in the White House -- editor) want to legalize the arms race, the essence of which are material and psychological preparations for a world war," stated our party's General Secretary, M. C. Gorbachev in answering questions from the editor-in-chief of the newspaper RUDE PRAVO (Footnote 1) (PRAVDA, 9 September 1986).

The 27th CPSU Congress assigned the Armed Forces and the Navy the task of comprehensively elevating military preparedness and vigilance against imperialist raids and maintaining constant readiness to defend the great achievements of socialism.

What must we teach personnel so that they can carry out these obligations to the Soviet people, so that they can carry the day against this strong and insidious and therefore dangerous enemy if imperialism dares to attack our country?

There have been radical qualitative changes in the naval weapons of all the major sea powers in the post-war period. The missile, with its long range and fast flight speed, good anti-jamming capability, secrecy, autonomous movement and high target-destruction probability, has become the primary naval weapon. And this weapon is being modified so that it can be used in difference configurations that are fired from under water and on the surface, in the air and on land.

Nuclear weapons are firmly established in the ship-board arsenals of many countries. Atomic energy has replaced steam and diesel-electrical power plants, especially in submarines. This has significantly increased their speed and cruise duration.

The general introduction of electronics and computer technology in the navy has changed the methods and means for conducting combat operations at sea, significantly increased the operations and automation involved in commanding

forces and increased the effectiveness of observation and communications, navigational accuracy and weapons employment effectiveness.

This has created an entire system of countermeasures aimed at reducing, weakening and at times eliminating the capabilities of the enemy's electronic equipment. A new type of combat operation, electronic warfare, has emerged and its results can sometimes be compared to the effects of weapons.

The appearance of space equipment has significantly expanded the area for employing reconnaissance and communications means able to influence the course and outcome of combat operations at sea significantly.

And traditional types of naval weapons such as artillery, torpedoes, mines and bombs have also undergone qualitative improvements.

All of these features of modern military assets make it possible for the forces of the West, with their large naval groups constantly close to the borders of one state or another as they conduct their maneuvers and exercises, to make a sudden transition into actual combat operations and inflict appreciable losses on their armed forces and economy. Surprise was and still is the principle method the imperialists aggressors use to start combat operations and we must never forget this fact.

We must maintain heightened vigilance and military foresight and have our naval forces and assets constantly ready to repulse possible aggression so that we are not caught unaware.

The scientific and technical revolution in military affairs has also had a serious impact on the nature of war at sea. The spacial boundaries of naval force combat employment against ships and vessels at sea and also against littoral targets that are deployed both along the water and deep in enemy territory have increased significantly.

The typical combat operations in contemporary war at sea will include the use of a variety of forces to resolve common combat missions, the massed employment of long-range missiles and also active electronic warfare. All of this urgently demands that reconnaissance assets have increased ranges and be made more reliable.

The features of naval war that are listed above must be considered when setting up military training. The primary goal of military training is to teach personnel to resolve combat missions successfully under conditions that are new in comparison to the Second World War. And training must include those things that must be done in war.

The fact that the navy has been equipped with modern military technology and weapons has led to a change in the way that combat operations are conducted. And this improvement in the tactic of war is characteristic for all navies.

But all tactics are worthwhile only if they consider the military assets and operating methods of the probable enemy. The failure to react to everything new that the enemy shows, whether it be weapons or tactics, will certainly

reduce the military capabilities of the other side. Therefore the requirement "teach them what they need for war" includes the constant search for and mastery of the means and operating methods that will not only negate the efforts of the opposing side, but will guarantee the successful accomplishment of the tasks of modern battle.

The leaders of the Naval Narkomat [people's commissariat] showed a creative approach in resolving the problems of repulsing a surprise enemy attack under the difficult pre-war conditions of the international situation. Levels of military preparedness for naval forces were developed and introduced. Their timely transition to the proper level allowed them to avoid ship losses in the opening days of the Great Patriotic War and to repulse the aerial enemy in defending naval bases in an organized manner. This was part of the convincing evidence that their innovations fit the spirit of the times and weapons development.

During the course of military training we must learn to oppose the enemy's tactics and weapons with effective measures that will allow us to not only disrupt his plans, but also defeat him. We should consider the combat capabilities of all forces, set up clearly organized mutual support, use tactical methods that are unexpected and mass weapons suddenly at the time and place that is least expected.

It is well known that technical reconnaissance assets are making it very difficult to hide operations at sea. Therefore the skillful use of military strategem that can also provide a surprise combat effect on the enemy is an important factor for success in battle. According to the experience of the last world and local wars, the most effective method for achieving surprise is to confuse the enemy during combat operations about your intentions by using camouflage, disinformation, simulations, demonstrations and false operations.

And all of this must also be learned. Some leaders include elements of these measures in their military training only for the "check mark," so they only show these operations to get a positive grade. This was done in the unit where officer A. Gryaznov serves for example. As a result the camouflage that was set up did not fit the actions of the opposing forces which meant that is was not very effective.

And we must consider that the long ranges of these weapons and their increased accuracy on the target will create a two-fold mission for commanders at the tactical level.

On the one hand, they have to stop an enemy who is attacking and for this they have to have the skills to destroy him with the first volley at optimum ranges. Otherwise the enemy may be able to employ his own weapons and put our forces at a disadvantage. The ability to resolve this mission favorably will depend to a large degree on the timeliness of target detection and the guaranteed target designation, i.e., on well-organized and redundant tactical reconnaissance.

A naval training battle with the "enemy" showed that the major unit headquarters where officer S. Logvinenko is serving did not fully understand

the importance of this. The headquarters did not analyze the information on the accuracy of observed locations that was coming in from various detection assets, there were no attempts made to determine target movement parameters and their possible movement during the time the information became outdated and there were no attempts to confirm the accuracy of target selections using other available means. The headquarters officers were not able to cope with their assigned tasks.

On the other hand, sailors must constantly be at a high level of readiness to use all types of weapons to repulse unexpected mass enemy attacks and to guarantee the fighting ability of their ships if there is combat damage.

Any commander who does not thoroughly understand the peculiarities of a contemporary naval battle and does not show the necessary persistence in teaching his subordinates operations under conditions that are close to those in battle, risks being weaker than the enemy in the event that they meet.

For example, need to fight at the first volley and destroy the enemy at maximum range is sometimes only stated and actual military training conditions do not strive for these advantages. In trying to get a positive evaluation at any price, military exercise instructor officer A. Yakovenko simplified the situation for the ship commander so much that the latter did not have to bother with tactical issues. However the senior chief held a detailed analysis of the conditions under which the tasks were accomplished and objectively determined the final results.

Participants in such exercises do not acquire the necessary ability and experience in operating under combat conditions with its verification of all the moral-military and psychological qualities of the servicemen. Information that is gathered during such measures does not allow the mutual influence of weapons and the methods of employing them under various conditions to be skillfully and comprehensively analyzed. And this slows the further creative development of the art of waging naval battle and does not arouse commanders to display all the equipment and weapons features or develop new or improved methods and means for operating and verify them under near-real conditions.

As everyone knows, the primary figure who organizes the accomplishment of the senior commander's concept in battle is the commander. He may be the commander of a unit or ship, a group of ships or a major unit. The solution to a specific combat mission is entrusted to him, to his military knowledge and experience, to his ability to analyze the situation and foresee the enemy's actions, and to his ability to correctly select the moment and the forces for the attack [illegible] overall success of battle and the preservation of the ship and its personnel depend on his skillful achievements.

During a battle that includes massive electronic warfare the commander as never before may find himself in a situation where communications with his senior chief are unreliable and the situation demands a change in the plan of action. Only an officer who has been schooled in the entire gamut of military training to become independent and have initiative and who is able to make

bold decisions and take all the responsibility for this will be able to accomplish the assigned mission in accordance with the senior chief's concept under these conditions.

Commanders operate correctly when during the course of daily military training they have not only been taught the methods for conducting battle, but also have been inculcated with these qualities in a well thought-out manner. Unfortunately there are still chiefs whose service position obligates them to prepare personnel to operate under combat conditions, but who do not use all the available opportunities to develop the intrinsic skills to operate as they must in war. And these qualities were lacking in the former chiefs of officers N. Moskalev, V. Yelovskiy and their subordinates who showed that they had insufficient training in commanding forces, performed in an unsatisfactory manner in joint ship exercises and had poor control over the operations of their command posts and their personnel.

In order to meet any surprise fully armed, a commander must be competent in military issues, have an extensive political outlook, know the probable enemy's strong and weak points, have good tactical and naval training, be able to take a reasonable risk if necessary and more. All of these qualities do not develop on their own, but are instead developed and tempered in intense military training and on extended cruises.

The experience of preparing and making decisions to carrying out military training measures plays a major role in developing command thinking. It is precisely this process that verifies a commander's maturity and his ability to analyze skillfully the ongoing and projected situation, evaluate his own and the enemy's capabilities and also the factors that are influencing the success of accomplishing his mission, foresee variations in the action for various situations and set up mutual support for battle in a detailed and well thought-out manner.

A careful analysis of extended cruises is an important asset in command training. For this to be instructive, it is advisable to define the criteria for evaluating the various aspects of the cruise before going out to sea so that sailors can punctually record the information, carefully analyze it, make skillful, well-grounded conclusions, come up with recommendations that have been thought out and determine the issues that must be further evaluated both on shore and at sea.

Major unit commands and headquarters specialists have a primary role in this, for they are the ones who develop the criteria for the cruise, and after it is over they are the ones who analyze the accomplishment of the assigned tasks and the results. And in doing this they must manifest exceptional attention, maximum exactingness and objectivity and scrupulously study the cruise conditions, the actions of the personnel and the end results that were supposed to be attained.

I will give an example of this. While reviewing the training year people named one ship commander the worst as far as cruise security was concerned because his submarine was detected by the opposing side. But unfortunately no one pointed out his errors or indicated how he should have acted in the given

situation. There was no comprehensive analysis of the hydrological-acoustical and navigational conditions and their effect on the fact that he was detected. The review leader did not try to explain which of the commander's actions forced the opposing side's ship to close to detection range and did not provide a maneuver that would have allowed him to escape from "enemy" detection. This means that those elements of the episode were beyond the chief's attention, were not worthy of further discussion and did not stimulate an extensive search for new methods.

Here is another example. What kind of experience can the commanders of the ships, where officers V. Tarkhan and O. Lobanov serve and who were involved in joint actions, gain if the cruise analysis was conducted at different times, in different major units and without representatives from the other ship, without an analysis of the joint maneuvers and a comparison of the ship commanders' points of view at individual points of the cruise? What did the commanders learn by this that the staff and ships officers and the major unit command could take and use to organize and increase the effectiveness of jointly resolving tasks? Was there some kind of "military secret" which had to be hidden from others who might have to operate under similar circumstances?

Unfortunately there are times when the psychology of formalism still has an effect on evaluating the results that have been reached and when unusual, daring and bold actions by a commander are counter to the existing requirements. It is certainly impossible to provide incentives for deviating from the plan on the off-chance that it may work out. But if there is a creative approach that is supported by well thought-out conclusions that were verified ahead of time in the training class, then we must carefully study this method and possibly change the documents because of it.

The high level of activities by the sides and the increased dynamics of combat operations will be a characteristic of war at sea. Naturally this cannot help but have an impact on the work of major units and unit-headquarters. We will note only a few of the features of their multi-faceted activities -- vigor and reliability in controlling forces.

Headquarters work under combat situations with extreme time constraints will become a daily event and electronic warfare assets will be a serious hindrance to transmitting command signals to subordinates. Therefore training periods for major units and unit headquarters must be held under conditions that are as close as possible to real conditions to allow them to develop more clearly their work methods and their reliability in controlling forces during combat operations.

It is not possible to think about a battle without losses and these losses may well include the flagship command post. However command and control does not have to be lost if this happens. The reserve command post must immediately seize command and control. They must know the complete situation and must be able to carry out the accomplishment of the commander's decisions.

These truths are not new, but attention must be focused on them. As the logic of battle shows, enemies always strive to first knock command and control

systems out of action. And the increased weapons capabilities makes this threat even more real. Thus it becomes necessary to have high quality training for the second level of command and this is one of the most important requirements for improving the combat readiness of major units, units and ships. And we must honestly recognize that this is not receiving the necessary attention everywhere.

As in the past, the Soviet Union is continuing to promote comprehensive disarmament, the cessation of nuclear weapons testing and the elimination of the nuclear arsenal. The Soviet Union has unilaterally observed a moratorium on such testing for an extended time. The Soviet Union is at the forefront of the movement to prevent the development of new types of weapons and means of mass destruction. However the path toward an international solution to these issues is blocked by imperialism and its adventuristic ideas. Therefore sailors must be able to operate under conditions that include the aggressor's use of any means for nuclear attack. And the process of military training must not include a formalistic attitude toward developing the means to protect and preserve the fighting ability of ships. We must use the actual calculations and actions that leaders interject as hypothetical situations to get personnel, including the commanders and chiefs, to the point where they use the entire complex of measures to reduce the after-effects of this type weapon on the ship, the equipment and the personnel.

It is not difficult to imagine that a war that includes the use of all the latest weapons achievements will demand extraordinary physical and spiritual efforts from its participants. And added to this is the fact that personnel will have to be almost continuously combat-ready to repulse surprise enemy attacks and will be constantly aware of the danger and the necessity of accomplishing their own military duty under the extreme conditions of modern war.

Personnel must have a high level of physical endurance and moral-psychological tempering to carry out the assigned missions successfully. This is nothing less than the ability to act in an organized manner when the enemy has employed various weapons of mass destruction and where there are human losses and combat damage and to fight for the ship's survivability and fighting ability. These qualities are inculcated in a man as a result of well-presented physical conditioning and well thought-out regular training under conditions that could cause confusion, uncertainty and even fear if personnel do not have the necessary habits and skills.

It is certainly not easy to weaken the impact of these extreme conditions and school sailors in them ahead of time in training periods. But we must accomplish this task. They are operating correctly in the units where officers V. Prusakov and V. Romanovskiy are serving and personnel are focusing very intense attention on these issues. This is how they get their high marks in military training.

We cannot count on success in contemporary war at sea without strict military discipline among personnel on ships and in units and subunits. We must counter the increased psychological effect on people in battle with moral and political stability and strong, if not severe discipline. Punctuality,

accuracy and the highest level of execution are all the basic qualities that soldiers must have in military work. And therefore today we must persistently inculcate soldiers with those qualities and increase the severity of military service and exactingness.

Regardless of how complex modern equipment is, all of the final decisions are made by people. The ability to evaluate correctly computer recommendations and the reliability of machine analyses of incoming information in accordance with their completeness and to select the most optimal operational variation is developed in the classroom. Tactical trainers can simulate any situation inherent in a real battle and can create the psychological intensity of an actual naval duel, give one the feeling of a real armed battle at sea and evaluate the effect of tactical employments when combating a strong, able enemy. These trainers allow us to stop the training battle at any stage to analyze the on-going situation and the actions of the crews and the command while they are fresh.

The commanders and staffs in the major unit where officers V. Komissarov and V. Kolmanovskiy are serving are effectively using their trainer equipment. Before going out to sea they develop the various scenarios of the upcoming operations in the classroom and therefore changes in the actual situation during the cruise and the accomplishment of military exercises and unexpected hypothetical situations that are injected by their leaders do not catch the ship commanders by surprise. They operate confidently and skillfully in all situations and attain excellent results in military training.

Our navy has excellent command cadres at its disposal and they have a creative approach toward resolving their missions. They try to create the same situation in training and during exercises, a situation that demands that their subordinates exhibit energetic, but not haphazard actions, clear calculations and a high level of intensity, one that approaches real battle conditions. We are being more insistent about introducing into the navy active training methods that facilitate the development of excellent operator skills, non-standard decision-making processes, and speed in reacting to the rapidly changing situation to accomplish the assigned tasks. We are attaching special importance to two-sided tactical exercises that include the use of efficient weapons and when necessary we are not only showing our own capabilities, but are also are able to beat the "enemy" and oppose him with more skillful tactical operating methods and means.

Every military training measure in the major units, units, ships and subunits where officers V. Kravchenko, A. Kritskiy, E. Baltin, Yu. Polyakov, V. Kotov, I. Golovlev, I. Sanko, B. Kurkov and N. Amirov serve is preceded by intense base and land training and a careful check of the correctness of the management. And personnel are tireless in following the rule: allow something at sea or on a flight only after it has been extensively checked on shore.

And this is the reason for the excellent results in military and political training and the deserved successes in competition for the Navy Championships. This depends to a great extent on the creativity of commanders and their desire to accomplish qualitatively the assigned task regardless of the cost.

Submarine commander Captain 2nd Rank A. Golovan was operating under the difficult conditions of a training battle. He did not have sonar contact with the surface ships that had been detected, but was able to determine their positions correctly using incomplete information, determine the movement parameters and "destroy" the main target and its escort ship. This was no accident. The son of a naval officer, he had dreamed about military ships from his childhood. Fate made other arrangements, but Aleksandr Ivanovich did not give up. And when he was assigned to the Navy for two years after completing a nautical school, he managed to extend his service in the naval ranks. There were certainly many things that he had to do himself and his fellow workers helped him. Intense training and work brought him results and he became a ship's commander and a master of the torpedo attack.

Well organized party-political work has a major role in supporting a high level of military preparedness. The primary direction for this work is to guarantee absolutely that the 27th CPSU Congress decisions on defensive issues are carried out and that every communist and Komsomol member sets a personal example. Making skillful use of the patriotic upswing among navy young people that was brought about by the upcoming 20th Komsomol Congress, we must still make extensive use of socialist competition under the slogan "We Will Fulfill the Decisions of the 27th CPSU Congress And Will Greet the 70th Anniversary of the Great October With Selfless Military Labor!"

This article contains only the basic features of contemporary war at sea and the way to bring training conditions close to real battle conditions. But science and technology continue to develop and this means that the methods and means for waging armed battle are changing. Every officer must know the level of the world's achievements within his area of expertise so that he can forecast the possible developmental trends in military art and make timely corrections to the programs and methods for training his subordinates.

We must always remember Vladimir Ilich Lenin's words. "Increased military training does not require a burst of energy, a key or a military slogan, but prolonged, intense, very persistent and disciplined work on a large scale." (Footnote 2) (V. I. Lenin, Collected Works, vol 36, p 325). And this is the course that we will follow.



12511
CSO: 1801/105

CIVIL DEFENSE

REVIEW: SPECIAL PROBLEMS OF ARCHITECTURAL-STRUCTURAL PLANNING

Moscow VOYENNYYE ZNANIYA in Russian No 10, Oct 86 p 20

[Review by L. Rusman, chief of civil defense chair of Kuban Agricultural Institute, of textbook "Spetsialnyye voprosy arkhitekturno-stroitelnogo proyektirovaniya" [Special Problems of Architectural-Structural Planning] by A. Ilyashev, Stroyizdat, Moscow, 1985, 168 pages: "A Necessary Aid"]

[Text] Stroyizdat has published a textbook for students of construction specialties of higher educational institutions for the course "Architecture of Civil and Industrial Buildings." The author examines different versions for using existing urban buildings and underground facilities, and those being newly built, for protecting the populace against mass destruction weapons and other means of attack.

The principal objective is to provide students with the knowledge for solving engineer problems connected with sheltering the populace in protective works, reducing possible destruction and losses, and improving the work stability of national economic installations when the enemy employs mass destruction weapons. This is probably the first instance where the author of a textbook for future builders considers the planning of buildings and facilities with consideration of today's civil defense requirements.

The publication will largely help graduates of construction faculties whose diploma projects include civil defense matters.



6904
CSO: 1801/90

## TRAINING PAMPHLET FOR FORMATION LEADERS

Moscow VOYENNYYE ZNANIYA in Russian No 10, Oct 86 pp 15-18

[Sections 11, 12 from training methods elaborations under the 1984 special training program for nonmilitarized civil defense formations at national economic installations, third year of training, under the rubric "Toward the Training of Commanding Officers"]

[Text] Organization of Movement of a Formation

(Topic 11)

Methods Advice

This topic is worked over a two-hour period in a group classroom activity conducted by the installation CD chief of staff with all formation leaders simultaneously. It is advisable to cover three lessons: general provisions for formation movement, assignment of a march mission, and organization of movement.

First prepare a diagram of the route over which formations are to advance into the suburban zone and back to the enterprise for conducting SNAVR [rescue and emergency reconstruction work]. On the diagram indicate your main route, possible movement routes on the right and left, populated points, location in the suburban zone, water and other obstacles, a description of bridges (crossings), halt locations, and time for crossing the initial point and control points. It is also desirable to have a diagram of the march formation so that each leader sees his formation's place in the column.

In preparing for the class, the director studies features of the terrain on which formations most likely will have to operate, and he considers the condition of roads and bridges, natural and weather conditions, and degree of readiness of motor transport and equipment. This is necessary to make the class as specific as possible.

General Provisions

When a threat of attack arises or in case of an accident or natural disaster, depending on the situation both installation as well as territorial formations may either make a march to given areas or be moved by rail, water and sometimes air transportation. Formation movement by a combination method also is possible. This will be the most difficult in wartime: enemy aviation and other weapons and the presence of zones of radioactive, chemical and

bacteriological contamination, demolished bridges, road obstructions, and massive or individual fires in populated points and wooded areas will have an effect.

The march is an organized movement of formations in march columns primarily along roads but sometimes also along crosscountry routes. It is usually made in motor vehicles but is made on foot as well if necessary. A dismounted march is made over short distances, usually when motor transport is impossible or difficult to use.

Each formation makes the march in one march column. Motor vehicle columns move along roads at an average speed of 30-40 km/hr in the daytime and 25-30 km/hr at night. It is necessary to cover 4-5 km/hr in each case when moving on foot. Everything must be done to see that the march is made at the maximum speed possible under given conditions while ensuring traffic safety.

If motor transport columns have tracked equipment, it is best to use heavy-freight vehicle trailers to carry it in order to increase column speed. If this is impossible, the vehicles are sent in a separate column and over an independent route under their own power.

Intervals between subunits and vehicles in the same column are set depending on visibility conditions, road conditions and movement speed and may be 100 m between subunits and up to 50 m between vehicles. These distances usually are increased when a march is made under more difficult conditions.

To ensure that the march begins promptly and that movement is organized, an initial point and control points are designated. An initial point is established at a distance from the formation's location that would ensure extending the column for the march. Control points are established approximately every 3-4 hours of movement. Formations must cross them at a strictly designated time.

If a long-distance march is planned, a 20-minute stop is set an hour after the beginning of movement to check the condition of vehicles and correct troubles. After this the column moves another 3-4 hours; then there is a halt of up to one hour, further movement, and another halt. A long halt of up to two hours can be called for a meal in the latter half of a day's march.

Column alignment is not disturbed and intervals are maintained during halts. Vehicles are parked on the right shoulder. Everyone dismounts except for duty radio operators and observers and remains to the right of the road. Drivers inspect vehicles at this time. Traffic controllers are posted by the lead and trail vehicles to help oncoming and overtaking transport pass.

Vehicle maintenance is performed during march preparation. At this time briefings are arranged for drivers and vehicle commanders where march conditions and speeds are clarified and a reminder is given on safety measures and on the procedure for maintenance and for giving assistance.

There must be a technical maintenance echelon at the end of the column for repair, refueling, refilling of lubricants, and medical assistance to

personnel. This echelon usually is headed by the deputy formation leader for technical affairs (see diagram of the march formation of a composite territorial CD formation).

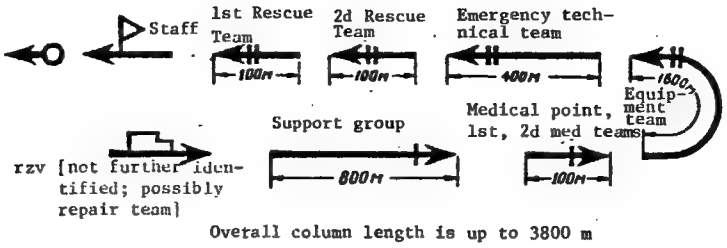
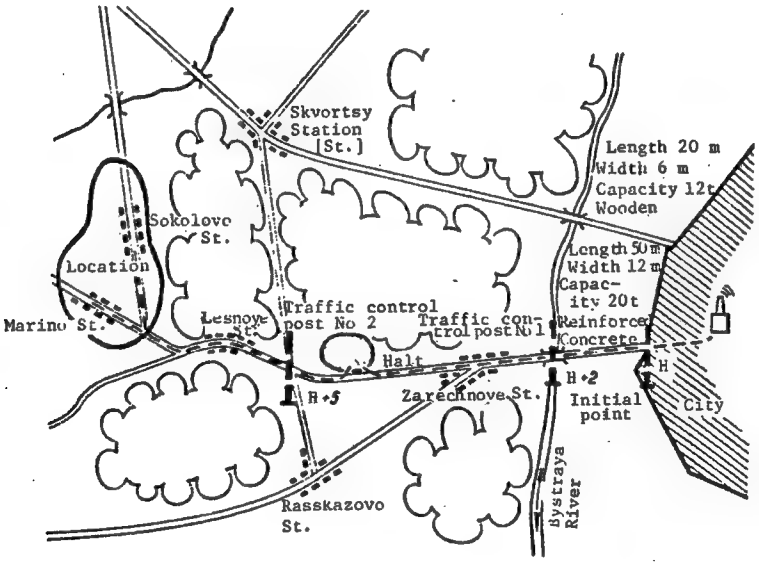



Diagram of march formation of a composite territorial CD detachment (on a route from the city to the suburban zone)

Mission Assignment

On receiving the mission for the march, the formation leader clarifies it; studies the movement route, condition of roads and road works and nature of terrain from a map or diagram; and takes account of the time of year and weather conditions (see route diagram). Then he makes the decision and issues the march order.




In the order he must give information on the situation; the formation's mission; objective of the march; movement route; time of arrival in the designated area; column alinement; movement speeds; interval between vehicles and subunits on the march; halt locations; time for crossing the initial point and control points; mission of adjacent elements; plan of action; missions of subunits (teams, groups) of one's own formation and attached subunits; locations of medical aid posts; permissible personnel exposure (in roentgens); readiness time for the march; and his own place in the march column and that of his deputy.

To ensure that the march is made in an organized manner and that time is used with maximum benefit, the formation staff must prepare and issue a warning order on preparation for the march. In addition, the staff prepares proposals for its leader on the decision for the march and march support; then it arranges supervision over preparation of personnel and equipment and organizes route reconnaissance and the traffic control service.

After the march order has been issued the staff begins extending the column; as movement begins it monitors timely crossing of the initial point and control point.

Organization of Movement

The established procedures must be strictly complied with during the march, especially movement speeds, intervals between vehicles and subunits, and safety measures. Column movement always is accomplished on the right side of the road, leaving the left side free, which is needed for oncoming traffic and for overtaking.

Disabled equipment is moved to the right of the road and repaired. After troubles have been fixed vehicles join the passing column; they can take their previous place in the column only at halts or on arrival in the designated area.

When repair is impossible on the spot, vehicles are evacuated to the closest SPPM (disabled vehicle collecting point). Formation (subunit) leaders must report all unserviceable vehicles and steps taken to their chief (or commander).

It is extremely important to maintain stable control and reliable communications on the march. Radio, mobile equipment and signaling equipment usually is used for this purpose. An observer is appointed in each vehicle to keep an eye out for signals passed along the column. The formation (column) leader proceeds in the lead vehicle for the most part and sees that established procedures and movement speed are maintained.

Protection against mass destruction weapons requires special concern. Radiation, chemical and bacteriological reconnaissance must be performed continuously during the march. This will not only permit warning personnel of the kind of contamination, but also allow prompt use of individual protective gear and sensible use of the protective properties of equipment, terrain and engineer works. It is also important to observe established safety measures during actions on contaminated terrain, perform dosimetric monitoring and take public health measures. On encountering contaminated zones the formation leader familiarizes himself with data on the nature and extent of contamination and determines methods for crossing the zones which will be most expedient under given conditions.

Before beginning to cross these zones, the personnel put on protective masks (respirators) at a prearranged signal (and protective clothing as well if necessary) and take the preparations available for this in the AI-2 individual first aid kit.

Depending on the levels, zones of radioactive contamination are crossed from the move or after radiation decay, and in some cases they are simply bypassed. Movement over contaminated terrain is at higher speeds and the interval between vehicles also is increased.

It is best to go around zones of chemical contamination. If this is impossible, routes should be chosen which would ensure least contamination or roads should be used following chemical decontamination.

As soon as zones contaminated with RV [radioactive substances] or OV [toxic agents] have been crossed, personnel, transport and equipment are monitored and then partial special decontamination is performed.

Zones of bacteriological contamination also should be bypassed with consideration of the location of the contamination and wind direction. Routes are chosen at maximum possible distance from the source of contamination. If these zones cannot be avoided they are crossed after biological decontamination of the route with subsequent emergency preventive treatment of the personnel. Specific preventive treatment is performed when the kind of pathogen used by the enemy has been established.

In organizing the march study terrain conditions carefully and consider the time of year and weather. For example, in winter vehicles must be prepared for operation in low temperatures and they must be ready to cross snowdrifts and move over icy roads. Advance concern must be shown for the personnel to avoid frostbite. The trucks on which people will be carried are outfitted with canopies, additional flooring is laid down and hay or straw is spread.

When there is ice on the road steep upgrades and downgrades are sanded and prime movers are posted at upgrades to tow vehicles. Vehicles with high crosscountry ability are distributed evenly throughout the column when moving over dirt roads in the fall-spring season of bad roads.

Organization of a march in mountainous areas requires special attention and concern. The route profile is of decisive importance. Movement speed must be decreased and the interval between vehicles increased in turn on downgrades, on sharp turns, in defiles and in other difficult and dangerous places. Waiting areas and passing areas are prepared in passes, on downgrades and upgrades, and in sectors with one-way movement; traffic control posts are placed at the entrance to and exit from a sector that is negotiable with difficulty.

There are also unique features in organizing a march in sandy desert areas. Above all one must choose the route correctly, clarify passability along the entire length and mark the route. Motor vehicles and other equipment are prepared for operation in high temperatures. Trucks are provided with canopies. Water reserves are established for formation personnel and equipment, and at the same time strict water discipline is established.

Rail, water and sometimes also air transport is used if it is necessary to move formations over long distances. In making calculations for transportation one must seek to preserve the organizational integrity of the

formation (detachment, team) and assure its readiness to perform the mission after unloading.

Formations proceeding in one train (or aboard one vessel) are consolidated in a serial, with one of the formation leaders usually appointed as commander. To help him, he is assigned a deputy, a political deputy, deputy for supply, and a physician (medical assistant). A serial duty officer, his assistant, and a duty formation (group, team [zveno]) also are assigned to maintain order en route. Forward and rear posts are assigned on trains and vessels for radiation and chemical observation.

Zones of contamination are crossed without halts and at maximum speed, taking into account the protective features of railcars and the established personnel exposures. Doors and windows are closed if necessary and the personnel put on gear for individual protection of respiratory organs. Constant dosimetric monitoring is performed during movement and the advisability of partial special decontamination is determined based on its results. If a serial has passed through a zone of chemical or bacteriological contamination, special decontamination of rolling stock and decontamination of personnel can be designated by decision of the senior commander.

In concluding the class it is advisable to question several trainees to see how fully they have assimilated the material and to answer questions which have arisen.

Liquidation of Consequences of Accident at Facility with Virulent Toxic Substances

(Topic 12) Methods Advice

This group class activity with the leaders of nonmilitarized installation formations is conducted for two hours, usually by the chief of the radiation and chemical protection service or (by direction of the CD chief) by the chief of the labor safety procedures and safety techniques department. Although it is organized for all leaders simultaneously, the instructor nevertheless must take into account the mission of each subunit, the specific nature of his installation, the experience of CD exercises and basic measures contained in the CD plan.

It is advisable to arrange the class as follows: first examine the concept of "virulent toxic agents" (SDYaV), since students often have no clear idea of what it includes. Some identify such agents with harmful substances, others with poisons, and some even with toxic agents. After this tell about the arrangement for notifying workers, employees and the populace about the danger of injury from virulent toxic agents. Remind them of the procedure for performing chemical reconnaissance at an installation, on its supply lines, and in zones of likely spread of virulent toxic agents. Dwell in more detail on the organization of work and the procedure for committing formations. Emphasize features of performing rescue work in a stricken area and in a zone to which virulent toxic agents has spread, taking into account the specific nature of the effect of these agents on the human body, and draw attention to basic safety measures.

Then move on to the practical part of the class. Here it will be necessary to give trainees practice in estimating the situation, receiving and detailing the mission, making decisions, issuing instructions, and controlling formations during the work.

It is best to prepare a diagram or layout of the installation with the actual location of containers of virulent toxic agents and indicating their amount and storage conditions (banking, presence of pallets and airtight storage, and so on). The actual weather conditions on the day of the class usually are used.

General Provisions

The requirement for defining what is included among virulent toxic agents arose because we find ourselves in a vast sea of modern chemistry. For example, at the present time there are up to six million chemical substances in the world. Ninety percent of them are organic compounds, the overwhelming amount of which are toxic. Specialists of the International Register gathered and analyzed information above all on 500 of the most high-volume and most toxic chemicals out of all the potentially toxic agents. The concept of "harmful substance" is used for them in industrial terminology, i.e., a substance which on contact with the human body in case of a violation of safety requirements can cause production injuries, poisoning, occupational illnesses and aberrations in the state of health detected by modern methods both throughout an entire period of work as well as in far-off periods in the life of the present and succeeding generations.

In civil defense, however, not all harmful substances are categorized as virulent toxic agents, but only those which contaminate the air in dangerous concentrations capable of causing mass injuries to people, farm animals and plants. The escape of these substances into the air is possible usually as a result of production, railroad, pipeline and other accidents.

The following can be included in the virulent toxic agent group according to physical properties:

--Volatile solids (with a storage temperature to 40° C): cyanides, ethyl mecurophosphate, ethyl mecurochloride, mercuran [merkuran];

--Volatile liquids stored in containers under pressure (compressed and liquefied gases): in subgroup A--ammonia, carbon monoxide; in subgroup B--chlorine, sulfur dioxide, hydrogen sulfide, phosgene, methyl bromide;

--Volatile liquids stored in containers without pressure: in subgroup A--nitro and amino compounds of the aromatic series, prussic acid; in subgroup B--nitrile acrylic acid, nicotine, anatizine [anatizin], oxtamethyl pyrophosphoramide, parathion, methyl parathion, carbon disulfide, tetraethyl lead, diphosgene, dichloroethane, chloropicrin;

--Fuming acids--sulfuric, nitric, hydrochloric, hydrofluoric and chlorosulfonic acids and chlorides of sulfuric, sulfurous and pyrosulfuric acids.

Notification of production personnel and the populace about the imminent danger of injury as a result of an accident holds a special place in the set of chemical defense measures. The principal role here rests with the plant (installation) dispatcher, the railroad station duty officer, MVD [Ministry of Internal Affairs] rayon department duty officer, rayon CD chief and rural soviet CD chief. The beginning of the exit (evacuation) of people from a possible zone of dangerous and extremely dangerous contamination depends on their timely notification. The audience's attention should be directed to the fact that in perfoming chemical reconnaissance it is necessary to make more complete and timely use of chemical contamination forecast data, on the basis of which the dispatcher will establish zones of dangerous and extremely dangerous contamination.

Results of chemical reconnaissance will give leaders an opportunity to make the correct decision for committing the main forces and resources to the stricken area and for mopping up the aftermath of accidents involving virulent toxic agents.

Forces usually are committed from the windward side of the zone of contamination. The group of gas rescue workers [gazospasateli] of the industrial enterprise is first into the stricken area. Its main task is to localize the escape (outflow) of virulent toxic agents and to take steps for leading (carrying) out victims directly from the accident site to a casualty collection point. Depending on the situation, the firefighting team enters the stricken area after this group. This team either puts out the fire or sets up an intercepting water screen. After it comes the group for protection of public order, which closes all entrances and exits in the installation, regulates traffic and maintains public order.

The emergency technical team is committed if it is necessary to clear movement routes, pump out water, or perform welding and other engineer work. If it happens to be necessary to decontaminate terrain, equipment and transport and reinforce the water screen, then teams for terrain and equipment decontamination will have to be committed.

Under all circumstances the communications group must provide for stable transmission of situation data from the stricken area to the control post. If casualties are found, a medical team [druzhina], rescue team [komanda] and installation medical personnel are immediately sent to give first aid to the people and evacuate them to the collection point. Other installation formations (subunits of the composite mobile detachment) usually are situated on the windward side and prepare to carry out their missions.

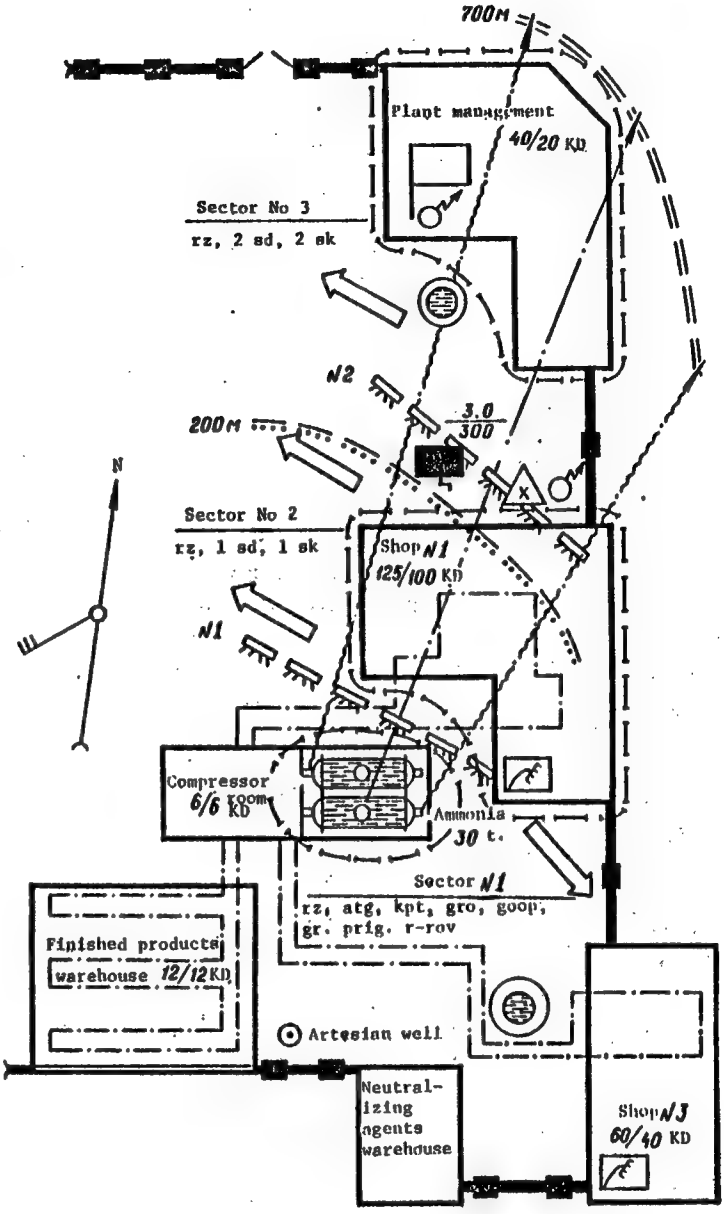
It is not superfluous to go over basic safety measures at the end of the first part of the class. Protective gear must be used depending on the nature of contamination. If it is necessary to work in a zone of extremely dangerous contamination, then remember that a person cannot enter there wearing filtering protective masks even for a few minutes. A person can be there only in insulating means of protection for respiratory organs. While working in a stricken area constantly observe each other and immediately give assistance at the slightest signs of injury. Do not remove protective gear, drink, smoke, or eat without a command.

Chemical situation at installation as of 0500 hours 13 July

Notes: Wind direction--southwest; wind velocity 3 m/sec; inversion; distance of zone of spread of nitrogen with lethal concentrations--200 m; distance with harmful concentrations--700 m (outside installation limits).

Key to abbreviations:

- rz [reconnaissance team]
- sd [medical team]
- sk [rescue team]
- atg [emergency technical group]
- kpt [firefighting team]
- gro [not further identified; possibly decontamination group]
- goop [protection of public order group]
- gr. prig. r-rov [not further identified; possibly group of suburban radio operators]




Legend

- Shop N 1 125/100 KD --125 is the number of shift workers; 100 KD is the number and mark of industrial protective masks;
- --Ammonia supply lines;
- --Boundary of formation work sectors;
- --Boundary of spread of vapors with lethal concentrations;
- --With harmful concentrations;
- --Direction of removal of people from danger zone;
- --Line for placing water screen

Take account of the wind direction without fail when emerging from a stricken area. Protective gear can be removed only at established locations.

Adhere to maximum periods for wearing protective clothing to keep formation personnel from overheating in summertime and periodically give those working a rest and douse them with water.

Chemical monitoring, hygienic washing and a medical inspection are conducted at the completion of work in a stricken area and after departure from a zone of contamination.

Work of Formation Leader

Playing the part of the chief of the PR i PKhZ [Radiation and Chemical Defense] service or chief of the installation labor safety procedures and safety techniques department, the class instructor places trainees in the situation (see diagram). It may be as follows. A 30-ton container of ammonia ruptured in a chemical plant compressor shop. The dispatcher notified shift production personnel and the command and supervisory personnel and made a chemical situation forecast. Workers in Shop No 1 act in accordance with the accident mop-up plan, but do not cope. They need help, there are casualties, and weather conditions are the actual ones. Before the CD chief's arrival at the installation the plant dispatcher has decided to mop up the aftermath of the accident using the plant's own forces and resources, to report what happened to the rayon and city CD staff, and to alert all formations, including those which are part of the composite mobile detachment. In accordance with this decision the dispatcher briefly assigned missions to the formation leaders:

--Gas rescue workers team is to act according to the authorized schedule and report work progress every even hour;

--RKhR [radiation and chemical reconnaissance] group is to determine and mark zones of dangerous and extremely dangerous contamination, establish the depth and width of the zone of contamination and keep an eye out for a shift of zones. Report results twice every hour. A sketch-report [skhema-doneseniye] is to be submitted by 0700 hours;

--Firefighting team is to place an intercepting water screen at line No 1 across a front of 200 m;

--Protection of public order group is to close entrances to and exits from the installation, strictly monitor access routes to the compressor room from the south, and maintain order in the accident area;

--Emergency technical team in coordination with gas rescue workers is to perform necessary emergency work to localize the escape of ammonia and its spread over installation grounds;

--Terrain and transport decontamination teams are to place an intercepting water screen at line No 2;

--Rescue team and medical team are to perform a search, give first aid and evacuate casualties to collection points;

--Communications group is to provide telephone and radio communications with the main formations operating in the stricken area. Readiness of communications by 0730 hours.

Control post of the installation NGO [CD chief] from 0700 hours on is the finished products warehouse.

On receiving the mission, each leader details it in his role. In so doing he must picture in his mind his own place in the stricken area, the expected work volume, and formation capabilities to mop up the aftermath of the accident.

Then all trainees make a calculation of forces and resources and determine the number of shifts and work procedures in the stricken area.

After detailing the mission and estimating the situation, the leaders make decisions and prepare brief instructions for their subordinates.

Before concluding the class the instructor evaluates the knowledge of individual trainees and gives directions on what to do by what time, what literature to read, and where to direct attention in preparing for classes with the personnel of one's own formations.



6904
CSO: 1801/90

TRANSCAUCASUS MD: UNFINISHED CONSTRUCTION PROJECT

Moscow KRASNAYA ZVEZDA in Russian 20 Dec 86 p 2

[Article by Major Zotov, special KRASNAYA ZVEZDA correspondent, Red Banner Transcaucasus Military District under the "Following Up On A Letter" rubric: "But There Is No End In Sight At The Site"]

[Text] The unit where Colonel P. Todorov is serving began construction on the new soldiers' dining facility to replace the one that had become obsolete as far back as 1983. It was to have been put into operation in 1984. The third year is almost over and there is still no dining facility. And the end to this construction site is still not visible.

"It is good that the outline has been drawn and is sticking out of the ground." The secretary of the UNR [office of the work supervisor] partkom, reserve Colonel N. Kostenko, commented when we visited him at the construction site. But actually "construction" is a poor word, for there was not a single construction worker at the site. One can understand why contemplating this scene for so many years upset Colonel Todorov and he turned to the editor for help.

Todorov is not new to the unit. He went from soldier to commander here and was in other garrisons, but according to him, he had never seen anything like this. Why did he turn to the editor? And not by letter, but by telegram? Because he could not cope with the fact that military construction workers would scarcely arrive at work before they began trying to "take off."

But the strangest thing about this is that the UNR had already accomplished its mission at the site. Although they were yelling for help, the military construction workers left the site with their heads proudly raised.

And here is what chief of the District Construction Directorate Colonel S. Chukhrov calmly said when we dropped in to see him about the long construction time at the site. Yes, they say that something is wrong, winter is almost here and the site is not completed. But the construction workers are not at fault. Don't point at them. All blame should be directed at the client's representative, Lieutenant Colonel A. Khatskevich. According to the chief of the construction directorate, it is the client that is "throwing away the state's efforts and resources like peas."

And the deputy chief of one of the district construction directorate's sections, Lieutenant Colonel V. Sapegin, was of the same opinion. "A planning system was discussed long ago, but the workers are in no hurry to change it. Why should they think that way? We must get some kind of toehold and press the construction workers so that they have no choice. Then they will do it" And he related these facts.

In 1984 the client allocated one-tenth of the cost for construction and assembly work. In subsequent years the client allocated a little more. But there should have been ten times as much to manage the construction. So as we see, the long duration was planned. Moreover, there is no guarantee that the site included in the construction specifications will be completed in June 1987 as was planned. And again it is due to the fault of the client. It would have been possible to talk about such a commitment if a schedule for the delivery of technical equipment had not been attached to the construction specifications. It is impossible to build without this schedule. This is the construction workers' position.

The client, Major B. Novpuzov, was of another opinion. "The construction workers are not able to cope, and that is the whole of it," he categorically stated at the beginning. "They are always laying the blame on someone else."

In short, everything was turning out as stated in the story -- Ivan puts the blame on Peter and Peter puts the blame on Ivan. But as the saying goes, facts are obstinate. And when secretary of the UNR gorkom N. Kostenko rebelled against this turn of events and brought out his argument, there was nothing else for Novruzov to do but change his tone.

"We are a small organization," he answered. And in apologetic tone added, "Everyone wants to build."

Frankly speaking, it is hardly possible to accelerate the work in his unenviable position. And one might think that that is one of the main reasons for the long planned construction time.

However poor planning can in no way remove the guilt from the construction workers. What sort of respected expert will take on a task whose completion is planned to drag out for ten years. Yet the construction workers accepted the job, because open-ended construction and assembly is expensive and not much trouble. We can draw it out as long as the grass keeps growing -- we meet the plan for one year, then another... Thus they are indignant with the client's "stinginess" for appearance sake, when in fact this stinginess is only playing into their hands.

And the same goes for the client. Who can accuse him of not caring about how his personnel live. And inspector will exclaim, "Look how much they are building."

And this is what a mutual desire for an extended construction time can lead to. Is this why there are so many "bearded" construction sites in the district?

This is the wanton practice of extended construction times that received such a fundamental party evaluation during the 27th Party Congress. This practice is harmful not only because it scatters forces and assets. Its primary harm is that imminent socialist tasks are not resolved for many years. And there is an urgent need for these tasks to be completed now. One would thing that it is time to make these demands equally on the builders and the clients.

12511
CSO: 1801/100

## KRASNAYA ZVEZDA 'RAID' ON CONSTRUCTION DELAYS

Moscow KRASNAYA ZVEZDA in Russian 24 Dec 86 p 1

[Article by Lieutenant Colonel M. Saliyev, chairman of the Committee for People's Control for the district's Construction Directorate, Lieutenant Colonel N. Kopeykin, inspection chief for the district Housing Operation Administration's technical supervision section, and Colonel G. Ivanov, KRASNAYA ZVEZDA correspondent for the Red Banner Turkestan Military District: "You Do Not Correct Matters With Protests: KRASNAYA ZVEZDA Raid on Social Services Sites"]

[Text] Rain and snow were falling. Gusts of very cold wind were moving the curtain separating the kitchen cooking hall from the annex. The cook huddled, sensitive to the cold. Construction of the annex using construction units had begun long ago during the summer. District KECh [Housing Operation Administration] chief Lieutenant Colonel Gulyuk and military hospital chief Lieutenant Colonel I. Unguryan were heading this project. The walls had been put up quickly, but then the construction was stopped. The problem was that the plans called for wood to be used for flooring as in the primary building. But one of the senior chiefs who had inspected the project supported the use of ferro-concrete flooring.

They didn't have the necessary slabs so they had to return to the original plan. As a result the annex stands unplastered and with empty doors and apertures, although the time that it was to become operational has long since passed.

The participants in the KRASNAYA ZVEZDA raid certified that the facts of this long construction time were a vexing exception. Actually almost all sites being built for social structures in the district are put into operation within the established time. And we must consider that this year the local construction workers had to take some pains to get it all done. For example, an air defense regiment had a set of officer's quarters built, a boiler-room rebuilt and expanded, and a bathing and laundry combine essentially built anew. Personnel in the military construction detachment commanded by Lieutenant Colonel V. Ardelyan did all the work in the garrison in the shortest possible time and maintained their high quality.

It is possible to give many other examples of where workers on military projects and KECh and also military construction workers operated in close contact to resolve difficult tasks. Initially there were plans to build a boiler-room with two boilers on the grounds of that same hospital where officer Unguryan is the chief. This was to become operational in 1987. However life added its corrections to that plan. It became very necessary to put in not two, but four boilers and to get the boiler-room into operation in 1986.

The commander of the military construction detachment, Major A. Kononenko, organized his subordinates' work. The boiler-room walls went up, as they say, not in days, but in hours. And then a question came up. Where would they get the additional two boilers, the water pumps, water heaters and all the other equipment that is usually ordered one year before delivery. KECh workers came to their rescue.

When we visited the boiler-room, military construction workers were already putting in the heating insulation and painting the water pipes. The boilers and other equipment were set up and hooked into the water-supply system and had been tested under pressure. There was no doubt that the boiler-room would soon be operating, and one year ahead of schedule.

But it is no big thing to put one site or another into operation. What is important is that these sites can be relied on in the future. Unfortunately there are still many places where this is not the case.

Once there were complaints from the inhabitants in one of the buildings in a military camp in the Samarkand garrison. They said that their building was not getting proper hot water and heat. Could the specialists be a little more attentive in investigating and eliminate the original problem. The workers moved along the path of least resistance: they ran a pipe for hot water from the boiler-room to the house and they stopped with that--and in vain. The hot water was not going into one of the spurs as it had previously. And there was more. A new residential building was going into operation nearby. Shouldn't they have run a hot water pipe to that building?

Winters in the district are relatively mild. This often makes some leaders complacently melancholy. They say, we will get going in the warmth of spring. And instead of doing some practical work to develop the social sphere's material base, they generously dispense statements and promises.

For example, the district's KECh chief, Lieutenant Colonel V. Lebedintsev, is known for just such a "style." Why, then, be surprised by the fact that it is as cold in the officer's barracks that are entrusted to him as it is in the street. Leaders whose words diverge from their actions should be removed from the positions that they hold. It is possible that this could serve as an object lesson for other KECh chiefs.

As we can see, even in a "warm" district winter makes heavy demands on those who, because of their service responsibility, must show concern for the service and living conditions of servicemen and their families.

12511
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## U.S. CARRIER-BASED AVIATION STRENGTH PROJECTED TO YEAR 2000

Moscow MORSKOY SBORNIK in Russian No 12, Dec 86 pp 66-73

[Article by Col I. Kutsev: "U.S. Carrier-Based Naval Aviation to the Year 2000"]

[Text] In its plans for the attainment of global and regional superiority and to ensure the "protection of American interests," the military-political leadership of the United States allots a most important role in peacetime as well as wartime to general-purpose naval forces and their basic component--multipurpose aircraft carriers with their carrier-based aviation. With the Reagan administration's coming to power there was a sharp increase in appropriations for the conduct of measures directed toward an increase in the combat capabilities of the fleet, including naval aviation. Thus, during the five-year period of 1983-1987 it is planned to expend about 500 billion dollars on the modernization of ships and the purchase of new weapons systems alone. The task is posed of bringing the total number of active naval ships to 600 units. The decision concerning the construction of the fifth and sixth nuclear carriers, the "Abraham Lincoln" and the "George Washington," has been approved. Thus, at the beginning of the 1990's the total number of combat-ready carriers will reach 16.

At the beginning of the 1980's the fighting strength of carrier aviation included 10 types of airplanes: A-6E Intruder and A-7E Corsair attack aircraft, F-14A Tomcat and F-4 Phantom fighters, S-3A Viking antisubmarine [ASW] aircraft, RF-8G Crusader and RA-5G Vigilant reconnaissance aircraft, E-2C Hawkeye long-range radar detection and aviation control aircraft (AWACS), the Prowler EA-6B electronic warfare (EW) airplanes, and the EA-3B Sky Warrior electronic intelligence (ELINT) aircraft. In addition, eight SH-3H Sea King helicopters were based on each carrier to combat submarines.

All this equipment was taken into the inventory at the beginning of the 1970's and, according to a statement of the U.S. Navy command, does not completely meet the requirements of contemporary combat.

The multipurpose F/A-18 Hornet airplane was developed to update and increase the combat capabilities of carrier aviation. The command of the U.S. Navy, referring to the ever threatening alleged danger to its fleet, especially to multipurpose carrier groups (AMG), on the part of high-speed bombers with a large radius of action and of surface ships and submarines armed with cruise missiles, assigned the goal--to increase the combat capabilities and effectiveness of the protection of the AMG's in the far air defense [AD] zone (depth of 900 kilometers from the

center of the formation) and, first of all, to increase the distance for the detection of the aerial enemy and his destruction prior to the line for launching cruise missiles (CM). The mission was also assigned to strengthen the forces and means for the defense of the AMG in the middle and near zone. It is planned to modernize all carrier-based airplanes and helicopters in the inventory to prolong their service in the combat units to the middle and end of the 1990's and to complete the equipping of carrier-based aviation (as well as Marine aviation) with the multipurpose F/A-18 Hornet aircraft. It is planned to create the qualitatively new fighters F-14D Super Tomcat, A-6F attack aircraft, and SH-60F ASW helicopter on the base of the F-14A Tomcat and A-6E Intruder airplanes and the SH-60B Sea Hawk helicopter.

It is believed possible to reduce the length (now about 12 years) of the cycle for the development of models of aviation equipment.

The plan for building up the air fleet in 1985-1989 to 1,500 airplanes and helicopters proposed by the Secretary of the Navy is now being realized. It is the most extensive purchasing program in recent years (see Table 1).

Just what is the contemporary status of the naval air fleet?

The regular aviation and reserve in 1986 numbered about 5,700 aircraft. Of them approximately 33 percent belong to the U.S. Marines. Naval aviation numbers 2,200 combat aircraft of seven basic types.

Attack airplanes remain the main strike force and quantitatively comprise 40 percent of carrier-based aviation. Primarily two types of airplanes are in the inventory: the A-6E Intruder and the A-7E Corsair.

The A-6E Intruder attack aircraft (Figure 1) has two turbojet engines (TRD) each with a maximum thrust of 4200 kg. It is equipped with an in-flight refuelling system. It is outfitted with contemporary electronic equipment: the multifunctional AN/APQ-1 radar which provides the scanning of the Earth's surface with moving-target selection and the receipt of data on the relief of the Earth's surface for low-altitude flight and with a digital computer in combination with an inertial navigation system, radio communication equipment, an automatic flight control system, and a built-in system for monitoring the operation of the electronic equipment (REO). Using the weapons control system, one can accomplish the selection of the means of destruction and accomplish bombing and the launching of guided missiles (GM). In the course of modernization, the aircraft is being equipped with the TRAM combined weapons control system (SUO) which consists of a forward-looking IR [infrared] station and laser rangefinder-target indicator.

The armament consists of bombs (including guided bombs) for various purposes, the Bullpup GM, and free-flight aviation rockets (NUR) of 70- and 127-mm caliber. According to a report in the foreign press, the airplane is armed with Harpoon antiship missiles (AGM). The attack aircraft can attack ground and surface targets at a considerable distance from the carrier in any weather day or night. However, in evaluating the capabilities of the A-6E aircraft favorably in general, American military specialists believe that even after modernization it will not be able to accomplish missions successfully under conditions of a well-organized and effective enemy air defense system when launching strikes against his fleet surface forces as well as against shore objectives. Therefore, after the study

of a number of schemes in 1984 the decision was made to create a modernized version (A-6F) on the base of the A-6E attack airplane, equipping it with two non-afterburner more powerful and economical TRDD's [two-shaft turbojets] each with a maximum thrust of 4900 kg. The main requirement of the aircraft is a large radius of action and the presence of onboard equipment and armament which would permit executing an attack of enemy surface ships without entering the zone of action of the ship's air defense weapons.

Table 1. Plan for the Buildup of the Air Fleet in 1985-1989

| Class and Type of Airplanes, Helicopters (a) | Years (b) | | | | | Total (c) |
|---|---|---|---|---|---|---|
| | 1985 | 1986 | 1987 | 1988 | 1989 | |
| Attack Airplanes | | | | | | |
| A-6E Intruder | 6 | - | - | - | - | 6 |
| AV-8B Harrier-2[1] | 32 | 46 | 47 | 48 | 60 | 233 |
| Attack Fighter | | | | | | |
| F/A-18 Hornet | 84 | 102 | 120 | 120 | 120 | 546 |
| Fighters | | | | | | |
| F-14 A Tomcat | 24 | 24 | 12 | 12 | 24 | 96 |
| AWACS | | | | | | |
| E-2C Hawkeye | 6 | 6 | 6 | 6 | 6 | 30 |
| EW | | | | | | |
| EA-6B Prowler | 6 | 6 | 6 | 6 | 6 | 30 |
| Land-Based Patrol | | | | | | |
| P-3C Orion | 9 | 9 | 9 | 9 | 9 | 45 |
| P-3D Orion | - | - | - | 1 | 1 | 2 |
| ECX (Takanik) [sic] | | 3 | 3 | 3 | 3 | 12 |
| ASW Helicopters | | | | | | |
| SH-2F Sea Sprite, LAMPS Mk 1 system | 6 | - | - | - | - | 6 |
| SH-60B Sea Hawk, LAMPS Mk 3 system | 18 | 18 | 18 | 18 | 18 | 90 |

[1]Only for Marines

Table 1 (cont'd)

| (a) | (b) | | | | | (c) |
|---|---|---|---|---|---|---|
| | 1985 | 1986 | 1987 | 1988 | 1989 | |
| Helicopter Gunships | | | | | | |
| AH-1T Sea Cobra[1] | 22 | 22 | - | - | - | 44 |
| Assault-Transport Helicopters | | | | | | |
| CH-53E Super Stallion | 10 | 14 | 14 | 14 | 14 | 66 |
| Experimental Helicopter | | | | | | |
| HXM/JVX | - | - | - | - | 18 | 18 |
| Military Transport Aircraft | | | | | | |
| C-2A Greyhound | 8 | 8 | 9 | - | - | 25 |
| C-12B | 12 | 24 | 12 | - | - | 48 |
| Trainers | | | | | | |
| T-34C Mentor | - | 114 | - | - | - | 114 |
| T-44A Air King | - | - | 15 | - | - | 15 |
| TN-57 Sea Ranger | 36 | - | - | - | - | 36 |
| VTX | - | - | - | 8 | 24 | 32 |
| Total | 279 | 396 | 271 | 245 | 303 | 1494 |

In addition to bombing armament it is planned to equip the A-6F airplane with the Harpoon and Maverick cruise missiles and the HARM antiradar guided missile. The Sidewinder guided missile or the AJM-120 may be used as defensive weapons.

Great attention is being devoted to the protection of the crew and ensuring the survivability of the airplane. In particular, the fuel system is divided into two subsystems with corresponding protection of the tanks, tubing and other important assemblies.

Work is being conducted on increasing the landing weight of the airplane, which permits landing with an unconsumed reserve of fuel or unjettisoned expensive guided weapons. It is believed that this can be attained through a reduction of the landing speed by 15-19 kilometers per hour through more developed mechanization of the wing.

The start of series production of A-6F airplanes is planned for 1989. It is also planned to conduct the modernization of A-6E airplanes.

[1] [See ([1]) above]

The A-7E Corsair attack airplane (Figure 2), being the fourth modification of these airplanes, is intended for the accomplishment of missions basically during the day and with good visibility. It has the A-2 nonafterburning TRDD [two-shaft turbojet] engine with a maximum thrust of 6800 kilograms [sic]. Fuel supply in the internal tanks is 5680 liters, and in suspended tanks--4540 liters. It is equipped with an in-flight refuelling system.

The TRAM combined weapons control system consists of a forward-looking IR station, laser rangefinder-target indicator, and receiver. From 1977 to 1985 about 220 attack aircraft have been equipped with it. In addition, the airplane is equipped with an AN/APQ-126 radar, doppler navigation radar, detecting receiver, and electronic countermeasures [ECM] station.

The weapons control system supports the aircraft's employment of the Vulcan 20-mm built-in six-tube M61A cannon, bombs (including guided) of various calibers, and free rockets. According to reports in the foreign press, in the course of modernization the attack airplane is being equipped with the Maverick guided missile and the HARM as well as with the Sidewinder guided missile. The gradual replacement of the Corsair attack aircraft by Hornet airplanes was begun in 1984.

The F/A-18 Hornet attack fighter (Figure 3) belongs to the new generation of airplanes which are intended for use in the U.S. Navy and Marine Corps. It has also been taken into the inventory of the Canadian Air Force (138 airplanes having the designation CF-18), Spanish Air Force (84--EF-218), and the Australian Air Force (75--F/A-18).

The aircraft can be employed in four versions: fighter (F-18A), attack (A-18A), reconnaissance (RA-18), and dual-seat combat-training version (F/A-18T). The first two replace respectively the Phantom fighters and the Corsair attack planes, and the third--the RF-14A reconnaissance airplane.

One version of the Hornet airplane differs from the other virtually only by armament. And when employing the airplane as an attack airplane with the use of guided bombs and missiles--also by special removable equipment which consists of a forward-looking IR station and a laser target tracking station which are placed in suspended pods located below the left and right air intakes. According to data in the foreign press, the suspension of such equipment directly on the carrying airplane takes about 50 minutes. The engine has considerably fewer parts than on the F-4 Phantom fighter.

In combat with the aerial enemy, the weapons control system can simultaneously detect up to 10 targets and track (display on a scope) eight of them.

The computer equipment consists of two improved computers which receive data from the component elements of the weapons control system and the on-board electronic equipment of the airplane and generate commands for controlling the means for detection, display, guidance, and combat employment of the weapons.

The means of detection include the AN/APG-65 radar. It is a multifunctional, coherent, pulsed-doppler radar located in the nose portion of the fuselage.

Fig. 1

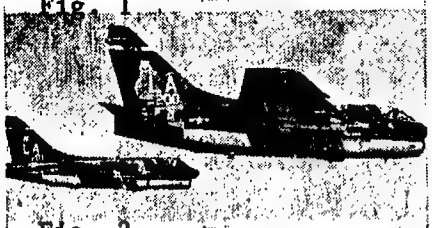

Fig. 2

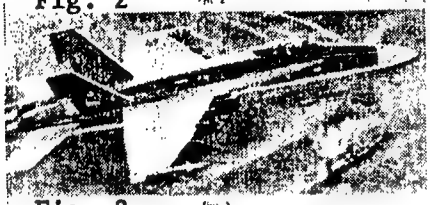

Fig. 3

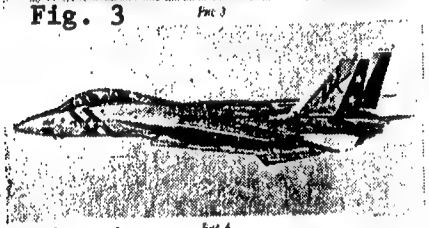

Fig. 4

Fig. 5

Fig. 6

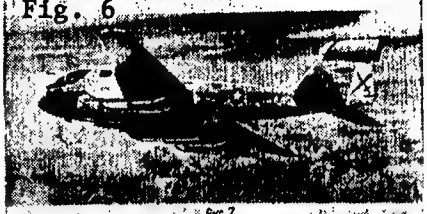

Fig. 7

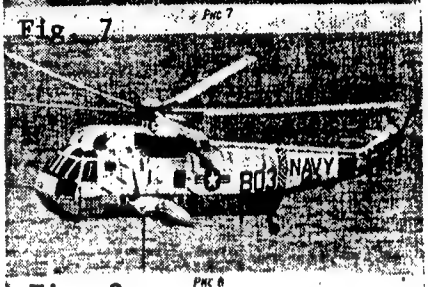

Fig. 8

The AN/AAS-38 IR station is intended for the use of on-board armament (guided missiles, bombs, free rockets, cannon) against ground and water-surface targets at night.

The AN/ASQ-173 laser equipment supports the employment of guided missiles, including those with semiactive homing heads.

The airplane is equipped with an AN/ALQ-165 ECM station and AN/ALR-67 detecting receiver.

To combat aerial targets, used as a rule are two Sidewinder short-range guided missiles (on the ends of the wing) and two Sparrow or AJM-120 (below the air intakes) medium-range guided missiles.

In addition, two more guided missiles can be suspended on pylons beneath the wing. A built-in 20-mm six-tube Vulcan cannon with a unit of fire of 570 rounds is located in the nose portion.

The F/A-18 airplane is superior to the fighters and attack airplanes which it replaces for such parameters as maneuverability (greater thrust-to-weight ratio), acceleration speed (at an altitude of 10,500 meters, acceleration time from 850 kilometers per hour to 1700 kilometers per hour--2 minutes), radius for accompanying attack planes (more than 740 kilometers), and accuracy in destroying

targets. The presence of two engines, protected fuel tanks and fuel lines, built-in fire extinguishers, multiple redundancy of the most vitally important systems, especially the electroremote flight control system, and the comparatively small dimensions of the airplane (wing span 12 meters, length 16.8 meters, height 4.5 meters), as is noted, ensure the increased survivability of the aircraft.

Initially, the Navy expects to purchase 1,366 F/A-18 aircraft: 748 for the fleet and 618 for the Marines (see Table 1).

With the arrival in the inventory of the AV-8B Harrier-2 vertical takeoff attack airplanes the plan for the purchase of the F/A-18 aircraft and their distribution between the aviation of the fleet and the Marines may be reconsidered.

Officially the F/A-18 airplane was accepted into the inventory of Marine aviation in January 1983, and in February 1985 the first two squadrons were redeployed to on board the carrier "Constellation."

According to data in the American press, with the acceptance of the F/A-18 Hornet attack-fighters into the inventory the combat composition of a carrier air wing changed (see Table 2). It is believed that the employment of the F/A-18 airplane as a fighter and as an attack aircraft, thanks to its comparatively rapid reequipping directly on the carrier, will permit the more flexible employment of one or the other version of the aircraft depending on the situation which develops at sea.

The F-14A Tomcat fighter (Figure 4) is the basic airplane which is employed to combat enemy aerial targets in the far air defense zone of the multipurpose carrier group. It is a two-seat, two engine monoplane with a high wing, having variable sweep (from 20 to 68 degrees in flight and 75 degrees when located on the carrier), twin-fin tail unit, and landing gear with a nose wheel.

NATO specialists have come to the conclusion that, from the viewpoint of possibilities of using the F-14A until the year 2000, the aerodynamics of the airplane as a whole, its design and, in particular, the wing with in-flight variable wing geometry do not require any important refinements and meet the requirements which have been imposed. Flight tests of the airplane which were conducted in the Navy with a new, more powerful, and more economical TRDD (maximum static thrust about 12,700 kg in afterburner) confirmed the possibility of a considerable improvement in the fighter's flight characteristics, first of all the combat radius of action. Thus, with suspension on the aircraft of four Phoenix guided missiles and two each Sparrow and Sidewinder guided missiles, two 1000-liter fuel tanks, and patrolling in an assigned zone for one hour the fighter's radius of action with new engines increased from 470 kilometers to 680 kilometers and the duration of patrolling at a distance of 280 kilometers increased from 91 to 122 minutes.

When intercepting an aerial target at a speed corresponding to Mach 1.3, the airplane's radius of action with the new engines in comparison with the former ones increases from 315 to 500 kilometers, and at a speed of Mach 1.5--from 250 to 400 kilometers.

The development of the F-14D Super Tomcat was begun in the middle of 1984. In addition to the replacement of the engines, the program envisions the equipping of the airplane with more improved on-board equipment which ensures the detection of aerial targets, depending on their size, at a distance of 120-315 kilometers and tracking 24 of them and attacking six simultaneously. It is noted that for the more reliable protection of the multipurpose carrier group it is necessary to increase the effectiveness of air defense in the far zone and, for this, to solve three basic problems: increase the fighter's radius of action, equip it with a new radar, and replace the analog electronic armament with equipment developed on the basis of digital technology.

For this, foreign specialists believe, they should first improve the old engines; second, replace the radar of the weapons control system with the new AN/APG-71 radar with increased resistance to jamming; and third, to include as part of the airplane's electronic equipment the JTIDS joint tactical information distribution system and the AN/ALQ-165 ECM station.

The airplane is equipped with an AN/ALR-67 detection receiver and an inertial navigation system. A new IR search and target tracking station (JRSTS) is being developed. It will be located behind a pod with a television camera suspended under the nose portion of the fuselage.

It is planned to increase substantially the effectiveness of the armament of the F-14D airplane. In addition to the built-in 20-mm six-tube Vulcan cannon with a unit of fire of 675 rounds the fighter will be armed with the Sidewinder guided missile having increased reliability and AJM-120's, the range of fire of which has been increased by approximately 30 percent. A typical version of the missile armament on the F-14D fighter is four Phoenix guided missiles and two each AJM-120 and Sidewinder guided missiles.

The program envisages producing 30 F-14A fighters with new engines prior to the end of 1987 and, on 40 fighters of the latest lot, to replace the old engines so as to arm two air wings with these airplanes prior to the completion of the development of improved electronic equipment and the start of output of the F-14D airplanes. It is planned to begin their series production at the end of 1989. The total number of fighters of this type will be about 970 units: 600 F-14A, 70 F-14A with new engines, and 300 F-14D with new engines and electronic equipment.

The S-3A Viking antisubmarine aircraft (Figure 5) is intended for the defense of the multipurpose carrier group in the medium and far ASW [antisubmarine warfare] zones. After the production of 187 airplanes their series production was stopped in 1978. The Viking is the first jet subsonic ASW airplane with a high wing and a single-fin tail unit. The crew consists of two pilots and two operators (of the tactical situation and sonar equipment).

Serving for the processing, control, and display of data are a digital computer, a processor for processing sonar signals, a receiver of sonobuoy signals, a generator for generating commands, and an analog recorder.

Special-purpose nonacoustical systems include the AN/APS-116 radar, OR-89/AA forward-looking IR station, AN/ASQ-81 magnetic detector, two AN/ALR-47 search receivers, and a navigation system consisting of inertial and doppler systems.

Table 2. Changes in the Combat Composition of Air Wings (squadrons--airplanes, helicopters)

| Type of Airplane (Helicopter) | Typical Composition of Multipurpose Air Wing (1985) | New Composition of Air Wings | | |
|---|---|---|---|---|
| | | "Constellation" | "John F. Kennedy" | "Coral Sea" and "Midway" |
| A-6E Intruder | 1-10 | 1-12 | 3-36 | 1-12 |
| A-7A Corsair | 2-24 | - | - | - |
| F/A-18 Hornet | - | 2-24 | - | 4-48 |
| F-14A Tomcat | 2-24 | 2-24 | 2-24 | - |
| S-3A Viking | 1-10 | 1-10 | 1-10 | - |
| RF-14A | 1-3 | 1-3 | 1-3 | 1-3 |
| E-2C Hawkeye | 1-4 | 1-4 | 1-4 | 1-4 |
| EA-6B Prowler | 1-4 | 1-4 | 1-4 | 1-4 |
| KA-6 | 1-4 | 1-4 | 1-4 | 1-4 |
| SH-3H Sea King | 1-8 | 1-8 | 1-8 | 1-8 |
| Total including | 11-91 | 11-93 | 11-93 | 10-83 |
| airplanes | 10-83 | 10-85 | 10-85 | 9-75 |
| helicopters | 1-8 | 1-8 | 1-8 | 1-8 |

Active and passive sonobuoys are used to detect submarines (60 buoys): AN/SSQ-41 LOFAR system, AN/SSQ-53 DIFAR, AN/SSQ-50 CASS, and AN/SSQ-2 DICASS. The airplane has four Mk46 torpedoes, two Mk57 or Mk54 depth bombs, four Mk82 explosive bombs, and mines. Units with 70- and 127-mm free rockets can be suspended on pylons beneath the wing.

Full-scale development of new electronic equipment for an airplane has been conducted since 1981. The first modernized S-3B Viking airplanes are undergoing flight tests. Being installed on them are computers with a large memory capacity, a new receiver of sonobuoy signals, a processor for processing the sonobuoy signals, a radar with an inverted synthetic antenna aperture, EW equipment, and an air data computer coupled with a Harpoon missile complex. Altogether, it is planned to modernize 160 airplanes which it is planned to leave in the inventory until the end of the 1990's. In addition, to equip the multipurpose naval carriers it is planned to renew production and deliver to the Navy approximately an additional 80 S-3B airplanes.

Reconnaissance aviation. With the removal of the RF-8 Crusader and RA-5C Vigilant aircraft from the combat composition RF-14A Tomcat reconnaissance airplanes have arrived on the carriers. A pod with the TARS reconnaissance equipment which includes a KS-87B and KA-99 (panoramic for photography from low altitudes) cameras and an IR reconnaissance station was suspended on a pylon beneath the fuselage of the fighter.

Flight tests of the F/A airplane with reconnaissance equipment were begun in the middle of 1984.

The Hawkeye aircraft for long-range radar detection and control of aviation [AWACS] with the first modification, the E2A, was adopted into the inventory back in 1961 and has been repeatedly modernized (modifications B and C, see Figure 6).

Up to 1985, of 113 aircraft purchased about 100 have been delivered. It is planned to continue their production of six aircraft per year until the middle of the 1990's.

The crew consists of two pilots, and officer of the command information center, an officer for the control of aviation (air traffic), and a radar operator.

The airplane has two turboprop engines with a maximum power of up to 4900 hp.

The basis of the set of on-board electronic equipment (weight about 4536 kg) is the ATDS combat information and control system which is intended for the control of the combat actions of carrier-based aviation. From reconnaissance data which arrive from various sources, it ensures the identification and classification of targets, the determination of their parameters and an estimate of the degree of threat, selection of the type of weapon, and guidance of interceptor aircraft or target indication for the attack aircraft.

The on-board computer complex with two computers serves for the real-time processing of information which arrives from radar and other systems. Data on each target (location, altitude, and flight speed) are displayed on a scope and are transmitted over the LJNK-11 data transmission line to the NTDS BIUS [combat information and control center] of the carrier and to the ATDS system with which other E-2C airplanes are equipped. The Hawkeye airplane can guide up to 30 interceptors to the target. Their primary mission is the destruction of enemy bombers before they reach the line for the launching of guided missiles.

Attacked first are the airplanes located at the shortest distance to the target. Initially the pilot of the F-14A uses the Phoenix long-range guided missile. After accomplishment of the attack, on command from the E-2C aircraft the F-14A fighter may be directed to the area for a rendezvous with a tanker aircraft in case of necessity.

The main element of the airplane's ATDS system is the AN/APS-125 radar. With flight under difficult weather conditions at an altitude of 9150 meters it can intersect aerial targets at a distance of 480 kilometers and simultaneously track more than 250 targets and control 30 fighter-interceptors. Cruise missiles can be detected at a range out to 185 kilometers.

To increase the capabilities for detecting aerial targets and prolong their period of service to the end of the 1990's, work is being conducted on the improvement and replacement of obsolete on-board electronic equipment. In particular, from 1983 the airplane is being equipped with the new AN/APS-138 unjammable radar which can simultaneously track 600 aerial targets and control 40 fighters. The radar can detect cruise missiles at a line of about 270 kilometers and conduct observation of the movement of ships and ground targets.

The EA-6B Prowler EW airplane (Figure 7) was developed on the basis of the A-6E Intruder attack airplane and is intended for the support of operations of the carrier-based aviation and surface ships.[1]

The airplanes have been modernized in the course of operation. In particular, work was conducted on increasing the number of frequency bands (up to eight) of the ECM station, improvement of means for the noise immunity of the equipment's operation, and an increase in the reliability of operation of navigation and radio communication equipment.

The development of new reception and data processing equipment is being conducted. It is planned to begin its tests on board an airplane in 1987.

Altogether, it is planned to deliver more than 100 airplanes to the Navy. Their series production in small lots (six to eight aircraft per year) is continuing.

The SH-3H Sea King carrier-based ASW helicopter (Figure 8) is an improved version of the SH-3A helicopter. It is the only type of ASW helicopter in the inventory of aircraft carriers. Means for the detection of submarines include the AN/AQS-13B sonar equipment, sonobuoys, AN/ASQ-81 magnetic detector, and of surface ships--the obsolete LN-66 HP radar.

The Mk46 homing torpedoes and Mk54 depth bombs are employed for the destruction of submarines.

To prolong the service period of the helicopter to the middle of the 1990's, since 1983 work has been conducted on reinforcing some units and elements of its construction, improving equipment, and ensuring the helicopter's capability to use the new Mk50 homing torpedoes.

Now a new helicopter is being developed on the base of the ship-based SH-60B Sea Hawk helicopter of the LAMPS Mk3 system to replace the SH-3H helicopters; it has received the designation SH-60F. According to a report in the foreign press, it is planned to equip it with the AN/AQS-13F sonar equipment which can be lowered, a signal receiver, and a central computer. It is intended for the search for enemy submarines and their destruction using Mk50 homing torpedoes in the near ASW defense zone of the multipurpose carrier group. It is planned to begin the replacement of the SH-3H helicopters with the new ones beginning in 1989. Altogether it is planned to purchase 175 helicopters including 90 to equip the aircraft carriers and 22 for the instruction and training of flight personnel.

The KA-6D tanker is reequipped from the A-6E carrier-based attack airplane. It is equipped with a refuelling system with a flexible hose and cone. It is intended for the transfer of up to 9500 kilograms of fuel to other airplanes. Four or five KA-6D airplanes are allotted to each air wing.

Simultaneously with the quality improvement of the fleet of carrier-based aviation, the Navy command is working out new, more effective methods for the conduct of combat operations at sea. Being improved is the system for material and technical support of naval aviation which is one of the basic components in the complex for raising the technical combat readiness of carrier-based aviation

[1] For greater detail about it see MORSKOY SBORNIK No 2, 1984, pp 80-84.


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CSO: 8144/3556

## BRIEFS

ABRAMS M1A1 DEPLOYED TO FRG--As the weekly JANES DEFENSE reported, American forces in West Germany are now being armed with the new M1A1 Abrams combat tank. The first subunits to receive this tank are those deployed in the Velseck Training Center in the FRG. The M1A1 tank is an improved version of the M1 Abrams with a more powerful weapon. Instead of the 105-mm grooved weapon it has the West German M256 120-mm smooth-bore gun. Mounting the gun required that the forward section of the turret be lengthened and its armor be reinforced. As a result the combat weight of the tank has increased and this has reduced its maximum speed and range. Western experts feel that the primary shortcoming of the M1A1 as compared to the M1 is the significant reduction in its basic ammunition load for the gun (from 55 to 40 rounds). American industry began serial production of the M1A1 in March 1986. The U.S. plans to buy 4199 M1A1 tanks for its Ground Forces. In addition, 560 tanks are to be acquired in the 1989-1992 years for the Marines. The cost of each M1A1 tank is 2.65 million dollars. [Text] [Moscow KRASNAYA ZVEZDA in Russian 24 Dec 86 p 4] 12511

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